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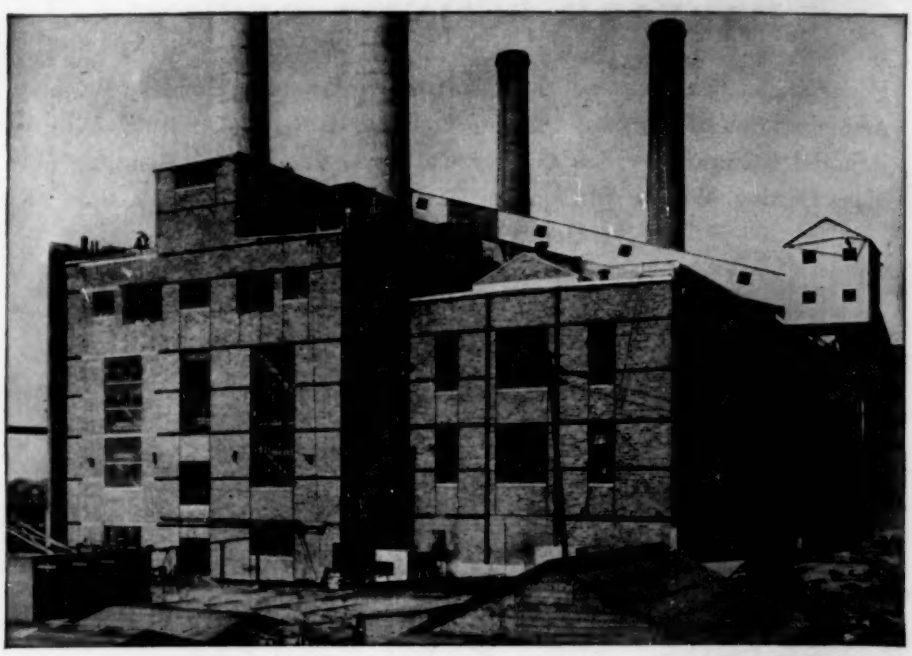

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THE INCREASE OF TAXES ON REAL ESTATE IN AMERICAN CITIES

By CHARLES J. BULLOCK

I

AS FAR back as the record runs, taxes upon urban real estate have only one direction of movement, and that is upward. A hundred years ago a tax of 30 or 40 cents per $100, levied upon realty valued at half or two-thirds of its true worth, probably sufficed for the requirements of most cities and towns; and as late as 1860 the average rate of taxation imposed for state and local purposes was no more than 78 cents per $100 throughout the United States. Then followed a great increase in state and local taxation which, by the end of the nineteenth century, made a rate of $1.50 per $100 very common and a rate of $2 not very exceptional. Today we find ourselves asking whether a rate of $2.50 or $3 has come to stay, and whether a rate of $3.50 or $4 is not in prospect.

These rates are mentioned as fairly representative, but are not true averages, which would be very difficult to compute. Where the basis of valuation is less than 50%, much higher nominal rates of taxation are found; and where a genuine effort is made to approximate full value, the rates are naturally lower. I am dealing merely with the general trend, and can fairly represent it by contrasting the tax rates of 30 or 40 cents which prevailed a century ago with those of $2.50 or $3 which now frequently occur and may be subject to further increase.

Under ordinary conditions, the increase of taxes upon real estate is gradual; but there have been two periods in our history when it became extremely rapid. Between 1860 and 1870 the per capita taxes levied on property for state and local purposes increased from $3 to $7.28, and the average rate of taxation rose from 78 cents to $1.98 per $100. For this great change the rapid growth of cities, the emergence of new economic and social needs, municipal misgovernment, and the inflation of commodity prices resulting from the Civil War

were responsible. The second period is that which was ushered in by the World War and may not yet have reached its end. Between 1913 and 1925, the latest year for which statistics are available, the per capita taxes levied upon general property in American cities having a population of over 30,000 rose from $17.82 to $39.20, while special assessments increased from $2.40 per capita to $4.52. For all taxes and assessments the total increase was from $22.16 per capita to $47.14 in the twelve years ending in 1925. Preliminary data for the year 1926 indicate a further increase; and anyone whose local taxes decrease in 1927 may count himself an exceptional as well as a fortunate man. We have been living in times as unusual as the decade which saw our Civil War; and the increase of local taxation which has recently taken place is due to somewhat similar causes, especially to the inflation of commodity prices such as results from any great war.

Since times are so exceptional and resemble in so many important respects the decade of the 1860's, is it reasonable to expect that the increase of local taxation will come to an end as it did in the former instance? No certain answer can be given to the question. In the nineteenth century the increase of public expenditures, and therefore of taxes, was sometimes checked by a period of enforced economy and retrenchment following severe commercial depressions such as occurred in 1837 and 1873. The hard times following the panic of 1893 checked the increase of public expenditures for a few years, but brought little enforced retrenchment; and the panic of 1907 did not check in any appreciable degree the upward movement of expenditures and taxes. Even before the war, therefore, there was reason for thinking that the forces making for increased state and local taxation had gathered such momentum that industrial depressions had little effect upon them. The same conclusion must be drawn from our experience with our last depression, which broke upon the country in 1920 and ran its course by the end of 1921. In the year 1919 the ordinary expenses (including interest) of cities having a population of over 30,000 amounted to $28.19 per capita, and in 1922 such expenses had increased to $41.42 per capita. Moreover, capital outlays, which were $7.38 per capita in the year first named, had increased to $15.95 in the second. Naturally enough, therefore, during this period of three years taxes levied upon property increased from $23.13 per capita to $34.54. We have, therefore, even more reason today than we had in 1913 to doubt whether the forces making for continued increase of local expenses and taxes can be checked even by the severest industrial depression.

The continued increase of local, and especially city, expenditures since 1919 is the more striking because it contrasts so sharply with the decrease which has been effected in the expenditures of our federal government. I do not refer, of course, to the reduction in military expenditures immediately after the war, but to the decrease of ordinary civil expenditures following the establishment of a national budget system and an efficient bureau for carrying that system into effect.

The divergent movements of federal and local expenditures are not difficult to understand. Few local governments, if any, have a budget system and organization that compare in efficiency with those which our national government has developed. Few local governments, indeed, have chief executives who dare to practice, preach, and en-

force economy at a time when politicians are afraid of the word and prefer to campaign for office on their records as liberal spenders. And, finally, there is the obvious fact that local governments touch more closely the personal, business, and social life of the people, with the result that the unpleasant side of enforced economy is brought more closely to the average voter. Abolishing useless bureaus, reducing pay rolls, eliminating waste, and moderating ambitious plans for public works and "improvements" are more or less thankless jobs anywhere, but are especially difficult and troublesome among friends and neighbors.

The revenue required to finance increased municipal expenditures has come chiefly from the property tax. Attempts have been made to diversify the sources of municipal revenue, but nevertheless the percentage which taxes on property bore to all revenue receipts increased from 62.1% in 1913 to 63.7% in 1925. What proportion of the taxes levied upon property fell upon real estate, we do not know. Statistics showing the assessed valuation of different classes of property indicate that the proportion which real estate bore to the total assessed valuation declined from 84.5% to 81% between 1913 and 1925. But this does not necessarily mean that the proportion of the property taxes falling upon real estate declined, because some of the property classified as personal, especially intangibles, was in some cities taxed at rates much lower than those imposed on real estate, so that the figures showing the separate valuations of real and personal property do not tell the whole story. We are thrown back upon the simple fact that taxes levied upon general property increased from $525,000,000 to $1,597,000,000, or 201%, during the twelve years covered by the latest available report, and that, therefore, taxes upon real estate increased rapidly and sharply.

II

Under these circumstances, it is natural that city administrators, owners of real estate, and others should be seriously concerned with the growing burden of taxes on urban real estate. It is also natural that they should inquire whether there is not some fairer method of distributing taxes which would afford the desired relief.

Of plans for reforming state and local taxation there are many; devising such plans has been a favorite pastime in the United States for over fifty years. There are probably few of us who, if given the necessary authority, could not get up a plan satisfactory to ourselves and put it into operation in comparatively short order. But tax reform is one thing, and reforming taxes is something very different. Tax reform may be a game of solitaire (and it frequently is); it may be a committee, a commission, or an organization activity, which affords outlet for superfluous energies and supplies mild diversion and excitement, of which most of us feel the need; or it may be a theme for endless oratory of the platform, soap-box, or after-dinner variety.

Reforming a tax, however, means passing from generalities to a definite project of law which will affect the pocketbooks of many people and inevitably arouse conflict of interest and opinion. It means, therefore, that, in proportion as one gets away from generalities and deals with definite projects, the number of supporters will diminish and the number of opponents will increase.

Both with tax reform and the reform of taxes I have had sufficient experience

to incline me to conservatism in estimating what may be accomplished in the way of securing a very different distribution of state and local taxes from that which now prevails. Please note that I said conservatism, not pessimism.

Adequate presentation of any of the plans which have been, and today are, proposed is so impossible within the space at my disposal that I shall be obliged to confine my discussion to a few outstanding facts and considerations particularly relating to the taxation of urban real estate.

1. *Separation of State and Local Sources of Revenue.* When serious study of state and local taxation began in this country over fifty years ago, the proposal which gained immediate favor was that of separating the sources of state and local revenues. It was clearly seen that the levy of a direct state tax upon property gave local assessors a strong inducement to undervaluation, since they could thereby reduce the proportion of the levy falling upon the localities they served. State boards of equalization had never succeeded in remedying this condition, and therefore the conclusion was natural that, since equalization did not equalize, the true remedy was to provide state governments with independent revenues by levying separate taxes upon corporations, inheritances, business licenses, incomes, and possibly other objects. It was then argued that, if this could be done, local governments could derive ample revenue from taxes upon property, chiefly real estate, not segregated for exclusive taxation by the state; and, under such conditions, it was said that either local assessors would discontinue the practice of undervaluation or that the practice would do no harm, since it would affect equally all taxpayers in a given locality.

But in reality the separation of state and local revenues was not a new plan. It had been tried by various states early in the nineteenth century, and in most cases had been abandoned; and the more recent experiments have not been generally reassuring. Abolition of the direct state tax has not led automatically to the assessment at full value of property subject to local taxation, and it is now evident that undervaluation has other and more deeply seated causes. Moreover, we have learned that undervaluation is not unimportant even when property is taxed only for local purposes, since it means that individual assessments in a given community may vary as widely as from 10% to 120% of the true value of the property. Such a condition in local taxation is not a thing of indifference to the state at large. The property overburdened may be that of a small minority which has no effective voice in local affairs, and it may be, and often is, the property of nonresidents who have no representation whatever in the government of the locality. The state has an obvious duty in the premises which cannot be justly or honorably evaded.

Moreover, the total abolition of the direct state tax destroys a desirable check upon state expenditures. Legislatures quickly spend revenues originally segregated, and then look around for more. At such times they are disposed to grasp at almost any expedient that may be proposed, and ultimately it has happened in a number of cases that a direct tax on property has been reestablished and that the plan of complete separation has broken down.

Nor has real estate necessarily benefited by the abolition of the direct state tax, for it has happened that whatever slack is let out by the state is speedily taken up by increased municipal tax

rates. It is certainly a fact that a high rate of municipal taxation does exert a deterring effect upon proposals for increased expenditure, and it is also a fact that, if the rate is reduced on account of the abolition of the direct state tax, local authorities are likely to proceed with plans that would otherwise be held in abeyance.

In this respect segregation resembles all other plans for redistributing the present burden of taxation: it is not likely to reduce permanently the rates of taxation levied upon real estate unless local expenditures can be brought under better control than has hitherto been found possible.

2. *Classification of Property.* Another proposal which has found many advocates is that of classifying property for the purpose of taxation and imposing different methods of taxation. This is reasonable, because property is not homogeneous in character but falls into well-recognized classes which differ widely in economic character. Real estate, tangible personal property, and intangible property are classes well known to the law and the world of business. The general property tax, by ignoring the economic differences of the three kinds of property and seeking to tax them by a uniform rule, has never secured, in practice, anything remotely resembling uniformity of results.

Intangibles have largely escaped; tangible personalty evades to a considerable extent, and when listed is usually assessed at a fraction of its true value; while real estate, which cannot be hidden or removed, pays the greater part of the total taxes. Though the lawmaker may ignore the economic difference of the things he seeks to tax, the assessor and the taxpayer will not and cannot ignore them.

By classifying intangibles and subjecting them to a moderate rate of 3, 4, or 5 mills upon the dollar, some states have substantially increased the revenue derived from this class of property and obtained far greater equality among taxpayers.

None of these states, however, has ever yet provided such methods of administration as are needed for securing the best results from the classified tax on intangible property. Other kinds of property besides intangibles have been given separate classification, with what results I cannot appraise because we lack adequate information.

Classification has undoubtedly been found to have difficulties as well as advantages, and cannot be expected to produce its best results unless proper methods of administration are provided. Like segregation, it will not reduce taxes upon real estate if new revenues derived from the flat tax on intangibles, or other sources, are absorbed by increasing public expenditure.

3. *The State Income Tax.* A third and more recent proposal is the adoption of a state income tax. Between 1911 and 1919 three states, Wisconsin, Massachusetts, and New York, enacted well-considered income tax laws, which have operated with general satisfaction because they exempted intangible property from other taxation, imposed moderate rates, and were administered by state and not local officials. Their example was subsequently followed by a few other states, which have not done so well because they did not provide the conditions necessary for the successful administration of such a tax.

We now know that an income tax may be a useful part of a system of state and local taxation, but that, unless intelligently handled, it will prove a disappointment and may even make a bad situation worse.

The state income tax is sometimes opposed on the ground that it means double taxation since the federal government levies a similar tax. This argument is not well founded, because under our federal system of government the citizen has a double obligation in taxation. Where such an obligation exists, it is not of itself objectionable that income, property, or any other object of taxation should be twice taxed, provided that the thing is done without discrimination and the total burden is reasonable.

So far as I have been able to judge, the recent opposition to a state income tax is largely a by-product of the natural reaction against the excesses of federal taxation of incomes during and immediately after the recent war. Prior to 1911 the state income tax was in general disfavor; thereafter for some years the success achieved by Wisconsin, Massachusetts, and New York led many to overestimate its advantages; today it is temporarily unpopular. But we now know that any state that is willing to enact a proper law and make adequate provisions for administration can make good use of a state tax upon incomes; and this fact had not been demonstrated sixteen years ago. Another thing we know is that the introduction of an income tax will not reduce the burden resting upon real estate if it is followed by an increase in public expenditures.

4. *The Gasoline Tax.* The slow and halting progress of all plans of tax reform stands in striking contrast with the rapid growth of taxes upon gasoline. At first thought, these gasoline taxes seem an interesting confirmation of Adam Smith's statement that there is "no art which one government sooner learns of another, than that of draining money from the pockets of the people."

But in this instance Smith's generalization is inadequate, for it would probably be equally true to say that the tax on gasoline has been widely approved because it afforded the American people increased facilities for draining money out of their own pockets. For weal or woe, every man, woman, and child in the United States seems determined to own an automobile and to have expensive roads upon which to drive it. The gasoline tax offered so many people a chance to secure something which they wanted at once, and might otherwise have to wait for, that it is easy to understand its general acceptance. It amounts, after all, to a trifling addition to the cost of owning and operating a car; the method of collection is practically painless, and the tax is soon forgotten in the joy of getting somewhere quickly and then getting somewhere else.

To some extent the new tax law may have reduced local levies upon property for road construction, but this has not helped urban real estate, since the money is usually spent outside the city limits. So far as the city dweller is concerned, the gasoline tax is a comparatively painless method of making him finance the building of country roads, a thing which otherwise he would have to do in some other way if the improved roads were to be had at all. In short, the owner of urban real estate is interested in a gasoline tax in his capacity as joy rider rather than as taxpayer.

III

It will not have escaped attention that in this account of plans for readjusting the burden of state and local taxation I have been unable to record anything which has made much permanent difference to urban real estate. Temporarily, such readjustments may have reduced

local taxation of property, but the final result of tapping new sources of revenue has usually been increased expenditure. For this reason it has become increasingly true that our problems of taxation are really problems of expenditure. If the cost of maintaining state and local governments continues to increase as it has done for a generation past, it is difficult to see how real estate, urban or rural, is going to secure any permanent relief.

I have had something to do, in Massachusetts and a few other states, with drafting laws providing new sources of revenue which might have resulted in moderate reductions of local taxes on property, chiefly real estate, but I have never seen that result follow the enactment of such laws. I have therefore lost some of the interest I used to feel in plans for *readjusting* tax burdens, and have been forced to the conclusion that the first and principal problem is not one of readjustment but of *control.*

Forty years ago, when I commenced the study of economics, the doctrine was still taught, and was supported by eminent authorities, that, while the total expenditure of any community must increase with the growth of population, the per capita expenditure ought to decrease. It was supposed by those who held this view that a law of decreasing cost applied to public expenditure and that therefore, as a community grew in wealth and population, new wants could be readily financed by the surplus resulting from the reduced per capita cost of existing governmental departments and services.

Of course there were dissenters, who pointed out that increasing density of population and other factors, such as the increase of wealth, might produce new wants and require more expensive provision for old ones. The next decade proved that the dissenters were right; and the old doctrine has not only dropped out of the books but even out of our memories. Today there is a general disposition to accept an increased per capita cost of government as a thing not only natural but desirable and an indication of social progress.

It is certainly true that, as wealth has increased and standards of living have risen, there has come a demand for higher standards of public service. It is also true that the progress of science and invention has not only demonstrated the need of such higher standards but has provided the means of attaining them. The discovery of the microbe has revolutionized the provision governments make for public health and sanitation; the internal combustion engine has revolutionized the construction of our highways and increased greatly the cost of policing them; increased interest in education has greatly increased expenditure for schools and collges. City and town planning has become a new art; the splendid work of our architects now gives us public buildings which stimulate community pride and lead to emulation or competition in luxurious expenditure. There is no need of multiplying examples. We all know that times have changed and that public expenditures are not necessarily governed by a law of decreasing cost.

But, while we can all see that the increased expenditures of the present day are due in large part to scientific, economic, and social progress, other factors are involved which seldom receive sufficient consideration and ought not to be left out of account. We should not forget that when any organization, public or private, doubles or trebles its expenditure, the percentage of money wasted increases at an even greater rate unless financial control keeps pace with the

expansion in the volume of business.

Business executives know that in a period of rapid expansion many things creep in which have to be eliminated in the following period of depression. Reduction of swollen overhead and drastic measures of economy are things which come with hard times because they are difficult and even impossible in days of prosperity. In this respect governmental business cannot differ from private. Between 1913 and 1925 the total government cost payments of American cities having a population of over 30,000 increased from $32.59 per capita to $71.46. This increase is due, of course, in considerable measure to the decreased purchasing power of the dollar; there is no doubt also that it brought a higher standard of public service in many directions. But it would be contrary to reason and experience to suppose that in this period of rapid expansion many things have not crept into the administration of city governments which can and should be eliminated.

Here and there a courageous executive has tackled this problem. Recently one city, by saving a few thousands here, tens of thousands there, and scores of thousands in enforced reduction of school expenditures, has reduced its tax rate 36 cents per $100 in a single year. Incidentally, it is worth noting that investigation showed that a score of grocers were delivering liquor to the city's poor under authorization of the department of public charities. Another and larger city in 1925 wiped out an inherited deficit of $1,100,000 and reduced the tax rate 49 cents per $100. That similar opportunities do not await the right sort of executive elsewhere, it is impossible to believe.

Another factor with which we have to deal is the natural desire of governmental departments to expand. Within reasonable limits, determined of course by the needs of the whole organization, no good executive would have things otherwise in either a public or a private corporation. But it is also true that this tendency needs to be carefully watched, and in government business control of the department that spends public money is often difficult.

If a department has much patronage to bestow, it may easily become *imperium in imperio,* and its head may defy the chief executive and even wreck well-considered plans of administrative organization. When the work of a department is of a sort that interests large numbers of voters, whether they be farmers, laborers, educators, or any other class of people, it is likely to receive about what it asks for; neither a legislator nor an executive welcomes a contest with it.

There is even more truth than humor in the definition given to a congressional committee by an experienced administrator, who stated that a scientific agriculturalist is a man who can make two dollars grow on an appropriation bill where but one has grown before.

Mutatis mutandis, the definition is equally applicable to the educator, road builder, city planner, welfare worker or other governmental agent carrying on an activity that is, or is supposed to be, popular with many voters. Economy is always difficult when large numbers of public employees are concerned or when the work of a small body of experts enlists active outside support.

IV

This brings us to a third factor, which for ten or twenty years past has become increasingly important—the organized activity of groups of citizens interested in securing new or enlarged expenditures

for a variety of causes and projects. In itself this may be a good thing, and to it we doubtless owe a large number of improvements which otherwise we should not now enjoy. But it is undeniably expensive, and it frequently leads to confusion between real public demands and demands that result from mere propaganda which does not really enlist public support. Civic and commercial bodies interested in the improvement of their communities naturally and properly endorse projects calling for increased expenditures. But such agencies for developing and directing public opinion have become so numerous and they are now so highly organized that it is difficult for public officials and boards of estimate and appropriation to "cut the coat according to the cloth." Most, if not all, of us, I suppose, in sundry times and places have done our part in organizing demand for increased expenditure, but mounting municipal budgets and increasing tax rates have brought us to a point where we ought to count the cost of new and attractive projects for spending public money. On every hand, I believe, we find evidence that in this respect the country is overorganized and that we are breaking down all control over the public purse.

Such control is always difficult, for it is so much easier for the man in public life to say "yes" than to say "no." As President Coolidge remarked last December, "Nothing is easier than the expenditure of public money. It does not appear to belong to anybody. The temptation is overwhelming to bestow it upon somebody." To the same general purport, a clever journalist has observed that the business man reasons that money is flat and therefore should be stacked; while the politician reasons that money is round therefore should be kept rolling along. Economy may be popular in the abstract, but when reduced to concrete proposals for saving public money it is usually anything but popular. When the chairman of the appropriations committee of the national House of Representatives addressed the chamber of commerce of a large city, he received enthusiastic applause for his plea for reducing national expenditure. But he subsequently wrote, in an article published in *The Nation's Business,* that on his way out of the dining hall he was met by at least a dozen members of the chamber who wanted to say a good word for particular appropriations that interested them. As the governor of Massachusetts expresses it, in these days a public official who practices and enforces economy receives very little help and feels very lonesome most of the time.

Governor Fuller's remark is the more significant because it comes from the chief executive of a state which has always provided liberally for real public needs and for some years past has been adhering resolutely to the sound policy of "pay as you go." Within the past decade we have reorganized the administrative departments of Massachusetts, introduced a good budget system, established adequate financial control, and refrained from contracting new loans. We have been financing necessary improvements out of current revenues, and can look forward to the time when the direct debt of the state will be completely extinguished. There may have been cases of unwise economy, but they have not been important or more numerous than should be expected. Economizers sometimes err, but so also do magnificent spenders, and our state, while following the straight and narrow path of financial rectitude, has been able to make reasonable provision for permanent improvements. Yet, in spite of this

splendid record, the "pay as you go" policy has been under constant attack and will be maintained only so long as we have governors who refuse to yield to the pressure of state employees and organized outside propaganda.

In ancient Greece, we are told, the city of Thurii had a law which provided that anyone who sought to abolish any existing law or establish a new one should come into the popular assembly with a rope around his neck and there present his proposal. If his innovation was accepted, he could go on his way rejoicing; but if it was rejected, the rope was tightened and he departed for that bourne whence no innovator or other traveler returns. The result may have been that Thurii was an unprogressive town which had to worry along without public improvements, and the punishment meted out to unsuccessful innovators was certainly extreme. But suppose that, in place of the rope, we required projectors of new enterprises to provide definite plans for raising additional revenue, and stipulated that new projects should not be undertaken until additional revenue had been actually authorized. Bond issues, of course, would not be considered revenue, but the new revenue might be used for interest and sinking fund purposes.

This would not discourage projectors unduly, but would help us to distinguish between real and manufactured public demands. In a number of states something like this was actually done when taxes on gasoline were introduced. If there is a genuine demand for an improvement, public opinion ought to approve the necessary ways and means, whether by increase of existing taxes or introduction of new ones. We need improvements and shall always need them, but we need also some better method than we now have of obliging the public that calls for new expenditures to reckon seriously and intelligently with the cost.

No private business could keep its head above water if its budget of expenditure was dictated by the pressure of more or less irresponsible and interested groups of employees, stockholders, or even directors. Yet this is precisely the condition which confronts us in the business of government. For a decade or more, municipal budgets have been subject to increasing pressure of interested groups professing to voice public demands and urging their claims under conditions which make coordination difficult and intelligent control well-nigh impossible. Public officials often realize this, but feel themselves swept along by an uncontrollable movement which seems to have popular support. So long as this condition continues, it is hard to see how real estate can hope for relief.

This is the appropriate place for the observation that commercial bodies, including real estate boards, have no little responsibility for the conditions I have set forth and that they can do much to make them better. We shall always need improvements, and with such things commercial organizations are properly concerned. But we want improvements that really improve, and we need to coordinate and moderate demands upon the public purse. With our city planning and all our other planning that tends to increase expenditures, we need also financial planning and careful consideration of ways and means.

In our private and business affairs we know that it is possible to go too fast and too far with expenditures that are in themselves desirable. We should realize that the same is true with the business of government and that we cannot go on increasing public expenditure indefinitely without reckoning the cost.

VI

Since the chief difficulty arises from the amount of public expenditure, there are some devices that should be avoided because they direct attention away from the real problem and produce results worse than the disease they are designed to cure. One of these is the limitation of rates of taxation. When unaccompanied by effective control of municipal borrowing, this device has generally had disastrous results. Municipalities soon increase tax rates to the maximum figures permitted, and then proceed to borrow such money as cannot be raised within the tax limit, even using it, in fact if not in form, for meeting current expenditures. Few American cities, if any, have not at one time or another borrowed money improvidently, and laws limiting tax rates have tended in no small degree to intensify this evil, which is the most dangerous in the whole domain of municipal finance. Current expenditures, as we all know, should be financed from current revenues, and limitation of tax rates has frequently resulted in financing some part of them with borrowed money.

Another device has been to limit not the rate of taxation but the amount of the tax levy, by requiring that no levy shall exceed by more than a certain percentage, say 5% or 6%, that of the previous year. When first adopted, this plan seemed partially effective, but further experience showed that the percentage of increase fixed as a maximum came to be accepted as the proper and even necessary rate of increase, with the result that, as an Oregon official expressed it, "the maximum became a minimum." Moreover, under the percentage limitation, there is the same danger of obtaining by bond issues money that cannot be raised within the limits imposed upon the tax levy. It would seem too much to say that tax limitations have always proved ineffective and injurious, but it is certain that they are pernicious unless they are accompanied by effective control of municipal borrowing.

From the preceding considerations it follows that readjustments in state and local taxation, diversification of revenue systems, and limitation of tax rates or levies are things to be entered upon with care and circumspection and with full realization that the principal problem in these days is the insatiate demand for more and more and more expenditure. I have said nothing in disparagement of tax reform, but have warned that it will not help real estate unless public expenditures can be brought under control. If the prospect is unpleasing, it is all that the facts warrant. The fundamental problem, I repeat, is one of expenditure and not of taxation.

The outlook for real estate is not brightened by another factor, to which all too little attention is usually given, namely, competition between states and competition between municipalities to attract people and wealth and industry, by offering more favorable conditions of taxation. This tendency is nothing new, but it seems to have gained force in recent years as a result of organized activity similar to that which has helped to increase public expenditure.

Tax laws intended to attract manufacturing industries, incorporated companies of all descriptions, and monied capital are no novelty in the United States, and efforts of municipalities to secure residents and industries by offering inducements, authorized or not authorized by law, are all too familiar to students of taxation. One state has recently amended its constitution so as to prohibit its legislature from ever im-

posing taxes on incomes and inheritances, and the influence of this action has been felt in many others which had been trying to improve their system of taxation. It is also a fact that in towns and cities in all parts of the country there are committees, councils, boards, chambers, and foundations, many of them, I suppose, receiving the support of real estate interests, which are working industriously to attract industries, and in this laudable effort are advertising as never before the advantages offered in the way of taxation. Low valuations on buildings, total exemption of machinery and stocks of goods, "co-operation" between tax officials and new industries, exemption of such industries for periods of five or ten years, exemption of manufacturing capital employed within the state, and other things with which many of us are familiar, are the bait offered by booklets, circulars, and newspaper advertisements broadcast throughout the nation.

We are faced, therefore, not only with organized effort to increase public expenditure but also with organized activity directed toward narrowing and reducing the basis of taxation.

Since no state and no municipality would benefit by such measures if all states and municipalities offered inducements exactly similar in nature and degree, it is obvious that the net effect is to attract industries, people, and wealth to those places which outdo the others. Competition, therefore, tends to become increasingly severe; and in proportion as the work becomes better organized and financed it constitutes more and more of an obstacle to tax reform. When a city can advertise that a manufacturer with $200,000 of capital will receive exemptions and other advantages in taxation which will save him $40,000 in ten years, it is easy for him to figure that by locating in that city the taxes he will save will, with the accumulating interest, amount to $50,000 and will enable him to write off 50% of his plant within a decade. In cities that play this game with the most success, some advantage doubtless accrues to real estate, but for real estate the country over the final outcome must be a loss.

What used to be a condition of no great importance and of a sporadic nature is tending to become a systematic and widespread movement which bodes no good for the future. It it continues, the basis of taxation will be continually narrowed, and there can be no doubt as to what class of property will be injuriously affected thereby. Looking at the matter broadly and ignoring the advantage that may accrue in some localities, we see that the exemption game, whatever its momentary attraction, is not one which the owner of real estate can play with advantage to himself. For many years state and local taxation has been honeycombed with exemptions that reduce the amount of taxable property and increase the burden falling upon real estate.

With such forces, owners of real estate have no community of interest, and against them they should, both in the interest of real estate and in the public interest, make ceaseless war. Even at some immediate cost, real estate interests should insist that the exemption of property yielding private gain is contrary to public policy and should be brought to an end. This does not mean that all property should be subject to a general property tax levied at a uniform rate, for such a method of taxation has never worked to the advantage of real estate or the community at large. It does mean that what we need is reasonable and practicable methods of getting from everyone a fair contribution to

public charges by such diversified methods as best suit the nature of the case. In this direction certainly, as well as in that of controlling the amount of public expenditure, the true interest of real estate owners lies.

The Problem Before the Real Estate Owner

He who buys real estate gives hostages to fortune. His property cannot be removed to another locality and cannot be concealed; he must, therefore, bear scot and lot with the community of his choice. Since his interests are localized, he must deal with local conditions as he finds them, and he is therefore vulnerable to attack by local projectors, planners, exempters, boomers, boosters, and advertisers. National conditions and the nation-wide results of financial policies affecting real estate may interest him in the abstract, but it is the concrete situation facing him in his home town that chiefly concerns him. Only by cooperation on a national scale, through organizations capable of taking the broadest point of view and considering the nation-wide effect of policies of local expenditure and taxation, can real estate owners avoid being picked off in detail by the organized forces now campaigning for increased public expenditure and continued narrowing of the basis of taxation.

Seven years ago, the country was in the midst of a great industrial depression. There was a shortage of buildings in most American cities, but construction costs were very high, and money was difficult to obtain. At that moment the real estate owner and operator had so many troubles that municipal taxation constituted one of the least of his problems. However, as the war receded further into history and real estate readjusted itself to peace conditions, real estate owners found that their tax problems were more important than ever before. Today it is safe to make the forecast that, if existing conditions in municipal expenditure and taxation continue for another seven years, urban real estate will find peace as onerous as war.

Instead of the shortage of buildings which existed in 1920, we now have buildings in plenty, and even to spare. Yet, under the influence of easy money, high-powered salesmanship of security dealers, and a highly organized construction industry which has service to sell and a large overhead to carry, the boom in building construction has continued. How long it will go on, I do not know. This year has brought a decline of activity in cities, which is a healthy symptom, but until money conditions change radically I shall expect to see a large volume of construction maintained.

During boom times the increase of real estate taxes has not been felt so seriously as it will be some day when our cities become further overbuilt and rentals and values move as they always have moved under such conditions as will then exist. Just as, in regions affected by the present agricultural depression, farmers are finding their substance devoured by high taxes required to pay for good things in which they indulged during the flush times that ended in 1920, so in many of our cities it is easy to foresee a pressure of real estate taxes not pleasant to contemplate.

Somehow, no doubt, the situation will be dealt with when it arises; but I am old enough to recall that forty years ago, in the decade of the 1880's, cities were still writing off inflated values and were liquidating debts that ought never to have been contracted, although the

boom conditions which had made these things necessary had come to an end in 1873 and the worst of the resulting liquidation was probably over by 1879. History never repeats itself precisely, but it does exact severe penalties from those who ignore it. We have been living through the most tremendous boom the construction industry has ever experienced in the United States. Such things always have been followed by a period of reaction; and the only prudent course is to put our house in order while there is yet time.

AMERICA'S AGRICULTURAL POSITION AND POLICY

By JOSEPH S. DAVIS

I

THE reformulation of America's agricultural policy, and particularly the decision upon specific steps to be taken now, should rest upon sound analysis of the present position and its causes, a clear understanding of underlying trends and tendencies, and some broad conclusions about national policy in general.

A really adequate discussion of the agricultural position is impossible in limited space. We have not one agricultural problem, but many. Conditions in different regions, in different commodities, are so diverse that generalized statements are often inaccurate and misleading. Nevertheless, something is to be gained from a broad view, for in discussion of multifarious details it is hard to keep the necessary perspective.

The central fact in the present situation is this: American farmers suffered severe depression after the war; despite considerable improvement, they have not yet emerged from this depression; and they fear further prolongation of the period of subnormal incomes. Meanwhile, other classes of the population have enjoyed an unprecedented and sustained accession of prosperity, and the persisting disparity excites agitation for radical measures of farm relief.

The evidence of agricultural depression is so abundant that it need not be marshaled in detail. Farm values have fallen heavily from their peak in 1920. Farm mortgage debt has risen greatly since before the war and represents a much larger proportion of farm values than in 1920 or before the war. Prices of farm products, in general and as a whole, have been for several years below their prewar ratio to the general level of prices. In several years since 1920, farm incomes, as a whole, have been relatively low in terms of purchasing power, whether in comparison with prewar farm incomes or with incomes of other classes. The burden of interest and taxes has been very heavy. Bankruptcies among farmers have run abnormally high and yet represent only a fraction of the losses of farms by operating owners. A terifically high movement from the farms to the cities has taken place, and a net decline in farm population, estimated at about three million in the seven years, 1920-1926, has taken place.

II

There has been manifest, indeed, a tendency to minimize the recovery that has taken place, to paint too dark a picture of the farmer's present position and outlook, to exaggerate the contrast between the farmers and the rest of the country, and to ignore the real but intangible advantages of the farmer. The decline in land values, for example, is commonly measured from the abnormal peak in January, 1920, when prices in general were at a high point. In fact, if allowance is made for the change in the purchasing power of the dollar, gross farm *values* are probably higher today than in 1920, though this is probably not true of farm values less farm

indebtedness. The Department of Agriculture indices of farm prices are calculated upon a base for a five-year period shortly before the war, when farm prices stood higher in relation to commodity prices in general than perhaps during any previous period of equal length. Comparable statistics of farm income are not available for prewar years, and the tendency is to compare recent figures with the high figures of 1918 and 1919. Some analyses of the available data, indeed, suggest that the purchasing power of current net income of farmers in the past three crop years has averaged as high as it did in the five years before the war; but in the recent period land values have been declining, whereas before the war the farmers counted on increase of land values to supplement their current income.

Comparisons of per capita incomes of farmers with those of other classes, indeed, are further misleading because they ignore numerous relevant facts. To mention only a few: many farmers have some income from outside occupations; much of the farmer's real income is not comparably measurable in money terms; farmers do not incur the risks of unemployment; the telephone, the radio, the automobile, and, in many cases, the tractor and electricity, have contributed more to the improvement of conditions of life on the farm than they have to life in the city; farming, in general, is not primarily a money-making activity but predominantly a mode of making a living. At worst, there are substantial advantages enjoyed by the farmer over his city cousin that are in no wise measurable in money terms, and recent developments have moderated many of his previous disadvantages. If farming offered in addition a considerable financial return, the drift into farming would certainly be excessive.

The tendency to exaggerate the unfavorable relative position of the farmer is not unnatural. In part it is due to delays, inexperience, and some bias in gathering and interpreting the basic data. In part it reflects a state of mind —the psychological depression is greater than the facts as a whole really warrant. In part it is due to the belief that a dark picture is necessary to excite the serious attention of complacent business men and workers remote from direct contacts with agriculture. It is part of the effort to procure vigorous measures on behalf of the farmer. This tendency to exaggeration, inevitable and indeed necessary though it may be, has some unfortunate results. It tends to arouse bitterness and to lead to the adoption of inappropriate policies. Emergency measures should be confined to emergencies, not established as persisting policies. Basic improvements in our national agricultural policy can be made only if the facts of the situation and outlook are appraised aright and in due perspective. The farmer, no less than the country at large, stands to lose by the adoption of ill-advised measures, devised to meet conditions which do not really exist.

I cannot accept the view, espoused by the National Industrial Conference Board, that there has been, ever since 1900, a progressive maladjustment unfavorable to the farmer. The true interpretation of the evidence is, I believe, that from the middle 90's until war broke out in Europe the economic position and social status of the American farmer showed progressive improvement to an unprecedentedly high level; that during part of the war period farmers experienced exceptional prosperity; and that only with the onset of the depression in 1920 did they fall upon hard times. I do not mean to imply that American farmers have ever attained, as

a class, a standard of life and work that one can regard as ideal. I am convinced that we should, so far as possible, seek such an agricultural policy as will not merely bring the depression to an end but make for raising farm conditions well above the levels they have ever yet attained. But I submit that one must distinguish between removing the causes of depression, on the one hand, and raising the farmer to parity (whatever this may mean) with urban workers or business and professional men, on the other.

I cannot endorse the view that if nothing is done for the farmer he will relapse into a state of peasantry. Peasantry is a status marked by relative immobility of occupations, limited access to education, and intensive cultivation of small plots of land. These conditions have never obtained in this country except in limited areas, and there is no reason to expect them to obtain.

Nor can I agree that we shall have to face a serious food shortage if the farm problem is not genuinely tackled. We can well do with much less of a food surplus than we have been producing. Occasional years of relative shortage will not be surprising or even undesirable. I see no reason why we should not continue to import sugar and tropical oils, as well as coffee, cocoa, tea, and bananas, in increasing quantities. With Canada at our doors, with increasing efficiency in food production, with the war experience to convince us of the ready expansibility of our own food production, with our diversity of production, we need have less fear of food shortage than almost any other nation in the temperate zone. Even with the growth of population we shall find in this country, I believe, that it will not be shortage of food supplies, but other factors, that will restrict our increase of population. Let us not be alarmed by any such bogies.

Nevertheless, without distorted analysis, the facts remain that the farmer has lately borne a heavy burden of financial distress and economic readjustment; he is not out of the woods; the agricultural position is not altogether wholesome; the outlook is not satisfying. The agricultural problem is rightly viewed as one of the major economic, social, and political problems of the day. It is true that in the 70's, and again in the 90's, the country suffered a similar agricultural depression; that of the 90's, indeed, was probably more severe than the recent one, but the accompanying business depression was so serious and prolonged that the contrast between industry and agriculture was far less striking. Such recurring depressions are a blot on our economic escutcheon. To prevent their recurrence in serious form, to minimize their unfortunate results, to facilitate prompter recovery, to promote continuous readjustment in agriculture and between agriculture and industry, to mitigate the sufferings from such adjustments, to reduce, if possible, the instability in farm prices and incomes now resulting from year-to-year variations in crops and live stock, to improve the efficiency, raise the economic status, and increase the social soundness of agriculture: these present a challenge to the best thought and effort of the nation.

III

The wise doctor diagnoses before he prescribes. Before proposing remedies, we must seek causes. What, then, are the major causes of the agricultural depression and the factors prolonging its duration and unsettling the agricultural outlook?

Certainly two fundamental and re-

lated groups of causes were the great rise of the general level of prices during the war and after, and the abrupt reversal of this movement in 1920-1921; and the accompanying increased demand for American agricultural products in Europe and its subsequent radical decline. The period of rising prices brought the farmers exceptional prosperity for the time. Rising costs lagged behind rising prices, and large profits were made. Land values rose, and mortgage debts previously incurred became less burdensome. Many farmers sold out and retired. But the farmer's prosperity—real enough as it was, though less in reality than in appearance—carried the seed of depression. It overstimulated farm production, and in agriculture especially it is notoriously easier to expand than to contract. The increased credit margin tempted many to buy farms at high prices or tempted established farmers to buy more land, and bankers did not properly discourage these tendencies. It encouraged the breaking up of new lands, the planting of orchards and vineyards, the building up of live stock herds and flocks. In part, these were the response to patriotic appeals for greater production; in larger measure, I believe, they were the response to high prospective returns, largely unchecked by expectations of subsequent reaction.

After the war, the decline in the general level of prices was a severe blow to the farmers. Prices declined faster than costs. Farm values declined, but mortgages did not. Moreover, the decline in Europe's need of imports of agricultural products was accompanied by increased output in Canada, Argentina, and Australia, and by recovery in Russia. In wheat, rye, corn, cotton, and hogs, competition from Europe itself or from other exporters revived. Still further, a decline in per capita domestic demand, which had been going on for several years, was intensified. Greater average longevity, shorter hours of labor, mechanization of industry and agriculture, increased transportation facilities, better housing and heating, have reduced per capita food requirements for energy and heat to quite a marked degree. The substitution of the automobile, the truck, and the tractor for the horse reduced the demand for horses, a farm product, and for horse feed. The restriction of immigration, by the war and after, and the higher level of incomes after the war, made for a reduction in per capita use of certain staple food products and an increased use of sugar, fruits, and vegetables, of which some are produced abroad, some on truck farms near cities, and only part by organized agriculture. Prohibition, even though ill enforced, reduced the demand for barley and other agricultural products, though it increased the demand for grapes. The war demands for cotton ended, the poverty of Europe retarded the recovery of her ordinary textile markets, and the increased use of silk and rayon competed with the humbler cotton. The ravages of the boll weevil, for a time, made for short crops and high prices and thus prolonged the delay in recovery of the cotton trade, while at the same time it stimulated expansion of cotton acreage outside the areas of infestation. Here, in short, we have in part a collapse of abnormal war demands and in part a tendency, present but obscured during the war and continuing since, for a reduced per capita demand at home.

Along with these factors there has been an increase of efficiency on the farm, in crop and live stock raising. This is not a new tendency, nor has it gone anything like so far as it can and must. But it was probably promoted to some

extent by the pressure of war demands and by depression conditions later. It has made possible larger production per farmer and thus has tended toward overproduction and depressed prices. One phase of this deserves a word of emphasis. The use of the tractor and the combine, with a knowledge of dry farming, has extended the frontier of wheat growing, notably in Montana and Southwest, so that wheat grown at low costs in these new areas competes with wheat grown in the older regions where these inventions are not economically applicable. And the extension of cotton growing in Texas, with the development of machine cultivation and picking, has brought lower-cost cotton into competition with higher-cost cotton from other areas of the older South. In a measure not fully appreciated, the farmers in older regions have been hurt by the extension of the farm area with the aid of newer production methods.

The result of such developments has been a state of overproduction, in the sense that farm products as a class have been forthcoming in excess of amounts that the market would absorb at prices remunerative to a large proportion of the producers. We have produced a surplus in the sense that smaller outputs would have brought the farmer a higher gross and net return. Under such conditions, our cultivated area and our farm population have been redundant; and apparently they remain redundant even after a period in which they have declined while the national population has increased.

Furthermore, variations in crops and live stock count, fluctuations in farm prices of different products in successive years and from week to week, have been pronounced. This is nothing new, but the variations have perhaps been greater than usual; certainly they have contributed to the uncertainties and the difficulties of the farmer and perhaps have increased his losses as well. In some quarters there is a tendency to consider this the root of the farmer's difficulties and the handling of seasonal surpluses the outstanding problem. This, I believe, exaggerates its importance. I recognize here a problem of long standing, which merits serious efforts to solve it, but it is no peculiar element in our postwar difficulties.

Among the complicating factors of the present situation are the "hangover" of old debts and the burden of high local taxes. Those who bought farms or farm land on credit at high prices have been the worst victims of the depression; banks that loaned to them have failed or suffered severe losses, and even solvent farmers and merchants have been embarrassed as lenders, bank depositors, and bank stockholders. This is one reason why the McNary-Haugen plan commands such support from merchants and bankers in the farming states, and why financial recovery of the farmers has been slower than the recovery in current income.

IV

I have spoken of a trend toward decreasing per capita consumption of domestic farm products, a trend toward increased efficiency per farmer. Another fundamental trend deserves emphasis—the trend toward industrialization. This is far from new, but it has been accelerated in recent years. As we have seen, industrial products like automobiles, gasoline, and rayon compete with agricultural products like horses, oats, and cotton, both in the cities and on the farms. Where such competition exists or arises, the industrial product has frequently an advantage over the agricultural in economy of production. Even

roadmaking, formerly a township odd job for the farmers, is now in large measure a specialized business. More fundamentally this tendency to industrialization rests on the fact that agriculture in the main produces foodstuffs, for which the demand is limited or inelastic, and declining per capita, while industry's products are of such variety that the demand for them is almost unlimited, quite elastic, and rapidly increasing per capita. The greater our prosperity, the greater our efficiency, the more widespread our technical and geographical specialization, the larger the field for industry and trade and the smaller the relative scope for agriculture.

There are those who deplore these trends and would seek to reverse them. Many business men seek to excite, by advertising, an increased demand for this, that, or the other food, to emphasize the danger of the fad for slim figures. Many agricultural spokesmen urge that we have overemphasized productive efficiency on the farm. Many prophesy national disaster if our tendency toward industrialization continues and if the farming population falls below, let us say, 25% of the total.

I cannot subscribe to these views, save in part. I believe these trends must be recognized as not, on the whole, undesirable and as at least inevitable. The reasons for the trend toward industrialization lie partly in the limited demand for agricultural products as compared with the demand for industrial goods and services of many kinds. They lie also in the fact that our national genius for invention, organization, and finance finds larger scope in industry, transport, and trade than in agriculture. Our increased population, with its ever-rising standards of living, rests largely upon this very industrialization. True, it brings its peculiar problems—greater dependence of employees upon business leaders, congestion of population in cities, and the like. But we are aware of these problems and are gradually approaching their solution. Recent developments, notably the automobile and long-range transmission of electricity, presage, I believe, a lessening centralization of industry and better access of industrial workers to semirural life. We have gained in knowledge of improving physical and psychological conditions of urban and industrial life and work and in coping with forces making for business instability.

That way progress lies, I believe, and not in attempting, like Canute, to turn back the tide, not in subsidizing farmers, directly or indirectly, to stay on the farms to be solid citizens and breeders for the nation. There is, I suspect, no magic in any given proportion of the population in agriculture, no inherent danger in a decline of this proportion, though at any given time there is danger that the decline may go too fast or too far. We need farmers and we shall have them, but we need farmers who are on the farms because they fully pay their way and choose that life, with its mixture of financial and intangible returns, because they prefer it to industry, trade, or the professions. I come of farming stock; I do not love the city; but I see no reason why we cannot contemplate a wholesome, well-balanced national life even if the proportion on the farms should fall much lower than it is today. A sound national economy and social structure implies no particular occupational distribution, but a changing equilibrium in which each part fills its rôle in nation's productive life.

This implies my agreement with the view that we need fewer and better farmers than we have had, and probably

still have, and that the net movement from the farms probably has further yet to go before agricultural overproduction will be eliminated. It need not disturb us that agriculture has a declining share in the national income. It is not the total agricultural income, but the income per farmer, that concerns us. We are right in believing that conditions are wrong when the typical or average farmer is chronically unprosperous. In so far as the redundancy of farmers and cultivated areas is a cause of depression, it is sound policy to promote the removal of this cause and to ease the essential process of readjustment. But the improvement of conditions involves more than this apparently simple and inevitably painful treatment.

I believe the McNary-Haugen bill was wisely rejected. I believe it would have tended to prevent wholesome readjustment, not to promote it. In operation its machinery would have encountered intricate difficulties, but even if it had overcome them its success, I believe, would have made for an increase in our surplus agricultural production, intensifying the problem it was designed to solve, and paving the way for a breakdown that would have been disillusioning and costly to farmers and business alike, but especially to farmers. I believe there is no such emergency as would justify us in saying, "Something must be done; here's a grand experiment; let us try it in desperation." Despite the talk of impassioned orators, agriculture is not prostrate or on the brink of complete collapse.

I do not believe that agricultural cooperation will solve the farmers' difficulties, with or without the aid of government funds. I sympathize with the cooperative movement, but it is a plant that cannot have a healthy growth if it be forced too much. Encouragement, guidance, and indeed a modicum of assistance the government may wisely give it in moderation, but no more. Certain administration proposals not only ignore this fact but rest upon the unwarranted assumption that the farm problem can be solved by improved merchandising, notably in smoothing the flow of products to market within a year and from year to year.

V

A first step in dealing with the problem is to spread the true knowledge of it. Much agitation for and against the whole policy of relief for agriculture, and particular measures, rests upon misunderstandings, incomplete analysis, unfounded assumptions. The Department of Agriculture is doing valuable work on the economic aspects of agriculture, but its publications still fall short of revealing and interpreting the full nature of the *status quo* and the course of current developments, especially in individual commodities and particular regions. Fortunately, the recent admirable report of the Business Men's Commission on Agriculture affords quite the most reliable, well-rounded, convincing discussion of the agricultural problem in the United States that has yet appeared, and should contribute greatly to sane progress in dealing with the situation.

But other steps than mere enlightenment are desirable. Some of these, such as state and local economy in expenditures, and redistribution of state and local tax burdens with the aid of such taxes as the income tax, are largely matters of state and local policy, but deserve support from federal agencies. Others, like the effort to confine within moderate limits, if not to eliminate, changes in purchasing power of the dollar, and the reconsideration and gradual

modification of our high tariff policy, are important not only for agriculture but for many other interests, but agricultural interests should be enlisted in support of them. Others, like the broadcasting of crop and market information, the analysis of prices, cycles, historical trends and tendencies, are already being cared for in increasing measure by the Department of Agriculture, and should be developed further. Many other particular moves are needed.

But what we especially need, at the moment and for the next few years, is not so much programs as machinery.

We have adequate basis for proceeding actively in certain lines and experimentally in others. The next step in our agricultural policy, I believe, should be to set up an agency competent to take steps, and charged with gradually working out, not in the closet but in practice, a solution that defies all efforts to reach it in advance of experience.

A Federal Farm Board, if wisely chosen and properly constituted, might well perform such a service, provided it were given adequate powers and not saddled with impossible duties. It should not be expected to administer a fully developed plan laid down by Congress, especially one of the proportions proposed in recent bills, but rather, under certain broad powers, to take definite action along several lines, and to supplement this action by bringing forward, from time to time, proposals for action or legislation in line with a maturing policy that would be in the interest not only of farmers but of the nation as a whole. Immediate relief where needed, early improvement where possible, but long-run advancement preeminently, should be the objectives. The board should not confine itself to recurring emergencies. It should work toward removing the causes of severe agricultural depressions; to develop and apply means for alleviating agricultural readjustment, tempering seasonal and season-to-season fluctuations, and promoting progressive agricultural movements, to find means of reducing the handicaps of farming and farm life. Had such a board been in existence since 1920-21, it could have done much that has been done less advantageously by other bodies and more that has not been done at all, and we should, I believe, be much nearer a satisfactory solution of the farm problem than we now are. Such a plan would not mean the final defeat of any favorite device or close the door to any type of action; rather, it would permit the orderly development, adoption, and administration of many elements in different plans.

There is also need, I believe, for a Federal Agricultural Council alongside the board. The best type of Federal Farm Board, as I conceive it, would be a board composed, not of farmers, but of the secretaries of Agriculture and of Commerce, a member of the Federal Farm Loan Board, and four appointed members of equivalent stature, from whom would be appointed a governor and vice-governor. The Federal Agricultural Council, on the other hand, should be composed largely of leaders of farmer organizations or other chosen representatives of the farmers. The board would have the power and responsibility, but the council would have the right to take counsel with the board —to receive its current appraisals and advices, to hear its periodical reports, to consider its actual and proposed policies, to question its analyses and activities, to suggest or propose new lines of action. These rights would be invaluable though the council possessed no positive powers. The influence of farmers would thus be brought directly to bear upon

the board, rather than upon Congress or Congressional committees.

Such a board and council, with the aid of three or more federal departments, could make headway in dealing with agricultural problems great and small. Together, the board and council could investigate far more effectively than temporary commissions, and focus their studies more effectively than the Department of Agriculture. They could presumably formulate policies better than the cabinet, a department secretary, a Congressional committee, or a Corn Belt committee. The board could act within prescribed limits and, when, where and as needed, seek Congressional extension of its powers with the council's approval. Such a plan would give the farmers more direct influence upon agricultural policy than they now have, but without putting this policy entirely in their hands.

It is true, of course, that no scheme works ideally. Certainly the outcome of such an agency would depend greatly upon the appointed members and the intelligence and standing of the board. Our experience with federal boards and commissions is not wholly reassuring. I am constrained to believe, however, that here lies our best hope of making substantial progress in dealing with the agricultural situation so far as it calls for national leadership and federal action.

A BALANCE SHEET OF AMERICAN BUSINESS

By J. GEORGE FREDERICK

IF THE federal corporation tax is not exactly a welcome impost on American business profits, nevertheless the tax return statistics make most valuable contributions to our knowledge of business. They may even, without too much stretch of the imagination, be said to constitute a balance sheet of American business; the truest one that could possibly be obtained, for the government audits the books of corporations, and the tax returns are known to be reliable and detailed to a degree which would never be made public otherwise. They are not, of course made public individually by the government; only in great groups of industry and commerce. Nevertheless, such information has never before been available, either from census reports, stock exchange statements, or otherwise. Many concerns which do not even show their balance sheets to their own banks must provide the government with full facts, and the government auditors look at the books to see that they are true figures.

Here, then, is a possible mine of data about American business which has been much neglected and seldom realized. The mass of figures routinely provided by the Treasury Department concerning the corporation tax returns are forbidding in appearance and calculated and arranged without special regard for analysis of American business. Moreover, the average man's interest in the figures lags because they are published a year and a half behind date. Thus in August, 1927, the 1925 returns are issued. Business men are too prone to demand greater up-to-dateness of analysis; but even with this time handicap the possibilities of analysis are so striking and novel that they must not be overlooked. As the returns have now been published for a sufficient number of years to make comparisons possible, the material gains in importance. It is a great pity that in the 1925 figures the 1924 plan was abandoned of breaking down the great groups into individual industries. It was probably too frankly revealing concerning the status of industries, and doubtless was complained against, since the new intra-industry competition is admittedly keen, and industries do not wish to disclose their weaknesses to each other.

The variety of observations possible to make from this data is exceedingly wide. It begins with the sheer number of corporations making returns. In 1920 there were 345,595 corporations, whereas in 1925 there were 430,072 corporations, a gain in number of 24.3%. Following now with the significant separating of the successful from the unsuccessful—those which reported a profit and those which reported a deficit—we find that in 1920, 142,362 corporations, or 41.1%, were unsuccessful, whereas in 1925 the number of unsuccessful was 177,738, or 41.3%. There is a remarkably close uniformity in this number of deficit-showing corporations in the six years, as follows:

Year	Total Corporations	Number Showing Deficit	Percentage Showing Deficit	All Income in Excess of All Deficits
1920	345,595	142,362	41.1%	$5,873,231,069
1921	356,397	185,158	51.9%	457,828,079
1922	382,883	170,348	44.4%	4,770,034,787
1923	398,933	165,594	41.5%	6,307,974,147
1924	417,421	181,032	43.3%	5,362,726,299
1925	430,072	177,738	41.3%	7,021,055,602

We come here to the first startling brute fact, that fairly uniformly nearly half of American corporations have been showing a deficit for a long period of years. Certainly this has never been accurately gauged before. The familiar saying that 95 out of 100 of those who enter business fail is not nearly so graphic or definite as the certified fact that precisely 177,738 corporations out of 430,072, or 41.3%, showed a deficit in 1925.

As far as volume of profit is concerned, 1925 showed a very encouraging advance. Profits rose higher in volume than before, and deficits sank lower in volume; and the excess of all income over all deficits—which, if it is reasonable to view American business as one large holding company with 430,072 subsidiaries—indicates that American enterprise decidedly bettered itself. The volume of profit by the 58.7% successful firms ran up to $9,583,683,697, as against $7,586,652,292 the year before. The volume of losses by the 41.3% of corporations was only $1,962,628,095. Nearly two billion dollars is, of course, no small amount of loss to show, and indicates the wide area left open for the stabilizing of business.

The above figures cover the entire range of American business—agriculture, mining, manufacture, construction, transportation, trade, public service, finance, and so forth. When we examine individual groups, much variation shows itself, as will be noted on the "balance sheet" of figures shown herewith (Table I).

Taking first the showing as to percentage of firms making a profit, it will be noted that mining is the country's weakest industry, only 28.6% making a profit. Agriculture is next, with rubber goods following. The industry in which the largest percentage of corporations show a profit is the paper and pulp industry, closely followed by the printing and publishing industry.

Studying the industries making the lowest gross profit on sales, we find that banking and insurance lead, closely followed by railways and public utilities, which hold the record, with 2% and 3.9% respectively. The industries making the highest gross profit are the stone-clay-glass group (31.6%) followed by printing and publishing and chemicals, 28% and 26.8% respectively.

The industries in which operating expense is very high are food, beverages, and tobacco, 81.8%, and retail and wholesale trade, textiles and lumber products, each with 79%. The industries with the smallest operating expense are the railways and public utilities, 5.7%. Amusements, hotels and professional services follow with 26.2%.

Coming now to the acid test of net profits after taxes, the absolute lowest in the scale is agriculture, which shows 1.7%. Not far behind is retail and wholesale trade, 2.2%, followed by leather products, 2.6%. The highest record for net profit is made by the railways and public utilities, 12.6%, closely followed by banking and insurance, 12.5%.

When the average volume of profit made by the successful corporations is figured out, it becomes clear that the large-scale corporations are making a very strong showing. That of the paper and pulp industry (average $863,254) is considerably more than twice as high as any other average profit made by any other division of industry. The only group which is at all comparable is the rubber goods field, in which are also a number of very large-scale companies. How high these instances are above the average may be judged by the fact that the average for all successful cor-

TABLE I. A CONSOLIDATED BALANCE SHEET OF AMERICAN BUSINESS

Tabulation of status of main divisions of American business, as revealed by 1925 corporation tax returns*

DIVISION	Percentage of Firms Making Profit	Percentage of Gross Profit on Sales	Percentage of Operating Expense	Percentage of Net Profit after Taxes	Average Volume of Profit per Successful Firm	Average Deficit per Unsuccessful Firm	Average Dividend Paid per Successful Firm	Income In Excess of Deficit	Percentage of Firms Making $10,000 Profit or More	Percentage of Successful Firms Making $10,000 Profit or More	Status as Compared with 1920†
Agriculture	47.0%	24.2%	50.3%	1.7%	$ 16,486	$11,296	$ 3,036	$ 17,647,001	18.3%	61.7%	+43.1%
Mining	28.6%	24.1%	54.1%	5.3%	82,649	15,207	1,603	243,643,214	32.2%	88.2%	−53.6%
Construction	63.2%	13.9%	63.9%	4.6%	16,131	7,689	4,412	113,144,715	23.4%	49.2%	+32.5%
Transportation and Utilities	62.9%	3.9%	5.7%	12.6%	98,822	15,397	42,868	1,333,948,245	20.0%	93.8%	+96.5%
Retail-Wholesale Trade	65.6%	16.4%	79.2%	2.2%	17,439	7,162	5,085	966,539,850	22.0%	55.8%	+69.0%
Amusements, Hotels, Professional	57.1%	18.2%	26.3%	5.7%	14,870	5,820	3,781	174,199,910	18.1%	57.0%	+49.7%
Banking, Insurance	63.1%	2.0%	33.9%	12.5%	20,804	10,684	7,157	1,067,604,184	21.5%	64.4%	+66.9%
Total Manufacturing	61.0%	20.6%	73.0%	5.8%	80,967	19,754	24,128	3,701,102,673	38.2%	85.6%	+12.7%
Food, Beverages, Tobacco	63.1%	16.8%	81.1%	3.1%	57,344	16,887	24,892	441,960,130	33.1%	81.8%	+100.0%
Textiles	61.1%	17.4%	79.3%	3.4%	55,052	24,076	33,447	298,342,421	38.1%	79.1%	+2.1%
Leather and Products	58.2%	17.6%	79.3%	2.6%	55,370	29,305	15,149	47,127,797	39.1%	77.8%	+9.8%
Rubber Goods	54.7%	23.8%	72.9%	7.9%	352,366	48,240	53,056	109,024,408	47.2%	96.7%	+212.6%
Lumber, Wood	61.0%	22.3%	71.9%	4.5%	43,013	17,847	16,192	147,200,455	44.7%	66.5%	−49.9%
Paper Pulp	66.3%	24.3%	72.5%	6.0%	863,254	18,614	33,602	99,049,253	50.8%	83.6%	−58.3%
Printing and Publishing	65.7%	28.0%	47.8%	6.7%	29,267	8,685	11,301	161,404,421	25.3%	70.3%	+7.9%
Chemicals	56.7%	26.8%	63.8%	8.9%	157,751	27,350	71,881	540,925,302	42.6%	92.2%	+56.8%
Stone, Clay, Glass	61.8%	31.6%	65.1%	9.7%	65,945	10,491	23,829	163,700,959	41.5%	81.0%	+14.7%
Metal and Metal Products	59.2%	19.1%	72.1%	7.4%	137,676	22,972	35,051	1,555,308,388	43.5%	90.8%	+21.9%
All Corporations	58.6%	16.1%	63.3%	5.9%	37,980	11,053	12,216	7,621,055,602	25.1%	78.2%	+29.7%

*Compiled by the Business Bourse, International, New York, October, 1927.

†Income in excess of deficit, 1925 compared to 1920. Minus or plus signs mean percentage of decrease or increase.

porations is $37,980. The smallest average profit is very naturally shown in the amusement, hotels, and professional services group ($14,870).

Turning now to the average volume of *deficit* shown by unsuccessful corporations, one finds that the largest average loss was made in the rubber goods field, $48,240. The explanation of this—required by the fact that the successful companies in this field made so large a profit showing—is that there are vivid contrasts in this field, filled with both very large and successful and very small and very unsuccessful firms. The industry showing the smallest deficit per unsuccessful firm is also quite naturally the amusements, hotel, and professional services class, $5,820.

On studying all dividend payments, both cash and stock, by successful corporations, it will be seen that the largest amount of dividend per corporation was paid in the chemical field, $71,881. Next to the chemical field, in order, are rubber goods, railways and public utilities, metal and metal products, textiles, paper and pulp. The lowest record is in the mining field, $1,603.

One of the most important indices to the status of an industry as a whole is a calculation of the amount of profit made by all the corporations in that industry, less the total amount of deficit. Judging the industries on this basis, we find that the manufacturing field as a whole has rolled up the greatest record, showing a total of 3,701 millions of dollars. Following this is the metal and metal products field, which shows 1,555 millions of dollars. Following this is the railways and public utilities with 1,333 millions of dollars, and following in order are banking and insurance, retail and wholesale trade, chemicals, food, beverages and tobacco, textiles, mining, amusements, hotels, and professional services, and stone-clay-glass. The field with the smallest showing is agriculture, which actually shows a profit of only 17 millions of dollars. The next lowest is leather and leather products, 47 millions of dollars. Taking all fields, the income in excess of deficit is 7,621 millions of dollars.

When we now look into corporation health by relative size, other interesting things show. The percentage of corporations making $10,000 profit or more for all fields is 25.1%. The fields which show the largest percentage of corporations making more than $10,000 profit are paper and pulp, 50.8%, rubber goods, 47.2%, lumber and wood, 44.7%, metal and metal products, 43.5%. The lines in which there is the lowest percentage of corporations making $10,000 or more are amusements, hotel, and professional, 18.1%, agriculture, 18.3%, railway and public utilities, 20%, retail and wholesale trade, 22%.

It is interesting now to examine the proportion of the profits in a given field which are made by corporations whose profits are $10,000 or more. In the rubber goods field 96.7% of the profits are made by corporations with profits over $10,000. Following in order are railways and public utilities, 93.8%, chemicals, 92.2%, metal and metal products, 90.8%. Taking all corporations, 78.2% of profits in American business are made by firms whose profits reach $10,000 or over. The lines in which this proportion is the lowest are construction, 49.2%, and retail and wholesale trade, 55.8%.

We come now to a final comparative measure which spans the years backward to 1920. It is fair to regard as an important index the change that has occurred since 1920 in the excess of profits over deficits in any given field,

measuring this change in percentages, plus or minus. In this way a very searching and clear measure of a field's advance or retreat since 1920 is possible. We find that taking all American business as a whole, it has advanced 29.7% since 1920. The line which has made the most rapid advance since that time is the rubber field, 212.6%. The next one is the food, beverage, and tobacco group, which has made a 100% advance. Following in order are railways and public utilities, 96.5%, retail and wholesale trade, 69%, banking and insurance, 66.9%, chemicals, 56.8%, amusements, hotels, and professional, 49.7%. The fields which have retrogressed are paper and pulp, minus 58.3%, mining, minus 53.6%, lumber and wood, minus 49.9%.

Many indeed are the further observations which may be made. Perhaps it is significant to reproduce the 1924 figures by detailed industries, since in the data supplied by the Treasury Department in 1925 this is missing. The

TABLE II. PROFITS AND LOSSES IN VARIOUS AMERICAN BUSINESSES IN 1924*

Line of Business	Number of Firms	Percentage Making Profit	Average Amount of Profit	Percentage Showing Deficit	Average Amount of Deficit	Total Profit in Field	Total Deficit
Bread, bakery products and retail sale	1,400	61.5	$ 61,042	38.5	$ 7,423	$ 52,618,309	$ 3,993,972
Milling, flour, meal, feed, etc.	1,496	68.1	37,712	31.9	13,531	38,428,357	6,454,488
Cereal preparations, etc.	194	57.7	176,747	42.3	8,433	19,795,627	691,508
Butter substitutes	27	48.1	19,779	51.9	31,911	257,131	446,750
Confectionery, candy, ice cream, etc.	1,440	58.5	53,921	41.5	12,858	47,455,707	7,676,321
Beverages and spices	148	72.3	71,296	27.7	12,268	7,628,718	502,089
Fish canning and preserving	244	56.1	23,925	43.9	20,386	3,277,737	2,181,321
Fruit and vegetable canning and preserving	1,035	65.5	41,623	34.5	12,805	28,220,828	4,571,378
Meat packing, etc.	592	71.9	179,910	28.1	93,540	55,341,888	15,527,752
Sugar making and refining, cane and beet	235	52.7	449,097	47.3	148,325	55,688,058	16,404,139
Ice manufacturing, etc.	1,531	71.5	18,301	28.5	14,100	20,058,569	6,133,515
Soft drinks, etc.	1,530	57.5	21,158	42.5	12,274	18,619,223	7,978,091
Tobacco	518	46.1	391,140	53.9	13,687	93,482,526	3,818,742
All other food products	1,098	57.2	73,066	42.8	17,648	45,885,461	8,294,607
Cotton goods, etc.	976	35.0	83,460	65.0	107,852	28,543,555	68,378,780
Woolen and worsted goods, etc.	531	61.0	109,750	39.0	86,779	35,558,992	17,963,260
Silk goods, etc.	708	45.3	57,205	54.7	47,126	18,362,960	18,237,983
Carpets, rugs, matting, etc.	120	60.8	219,647	39.2	19,205	16,034,250	902,657
Artificial leather, oilcloth, linoleum	32	56.2	440,174	43.8	12,202	7,923,138	170,834
Men's and boys' clothing, suits, overcoats	669	62.5	29,581	37.5	20,258	12,364,981	5,084,873
Women's and children's clothing, suits	1,664	58.5	8,429	41.5	9,496	8,210,038	6,552,485
Hats, caps, etc.	803	63.6	14,688	36.4	13,824	7,505,850	4,036,610
Men's and women's underwear, corsets, etc.	363	53.8	21,265	46.2	15,947	4,146,837	2,679,057
Shirts, collars, cuffs	302	53.6	13,625	46.4	20,807	2,207,305	2,913,058
Knit goods, hosiery, etc.	1,197	54.8	39,093	45.2	24,921	25,684,453	13,457,651
Boots, shoes, cut stock and findings	1,280	52.7	78,142	47.3	31,174	52,745,962	18,860,716
Gloves	31	70.9	6,034	29.1	19,106	132,744	171,956
Trunks and valises	198	57.5	7,057	42.5	10,434	804,596	876,447
Rubber boots, shoes and garments	28	50.0	22,639	50.0	6,579	316,949	92,105
Rubber belting and hose	13	61.5	747,240	38.5	33,473	5,977,926	167,368
Celluloid, ivory, shell and bone	98	50.3	12,520	49.7	18,038	651,046	857,386
Auto tires and inner tubes	134	35.8	282,084	64.2	61,072	13,540,025	5,252,254
Furniture, all classes	1,597	67.3	30,607	32.7	13,744	32,903,074	7,174,776
All paper containers, boxes, bags, wrapping paper, etc.	690	69.4	32,212	30.6	10,700	15,429,889	2,257,827
General printing, publishing, etc.	8,009	65.0	29,424	35.0	8,821	153,304,173	24,690,472
Paints and varnishes, etc.	820	62.4	44,949	37.6	11,621	23,014,097	3,579,426
Soaps	589	52.4	65,700	47.6	18,555	20,301,530	5,195,505
Fertilizers	241	56.8	31,728	43.2	116,888	4,346,800	12,156,362
Drugs, medicines, etc.	862	55.1	64,810	44.9	8,355	30,785,110	3,233,661
Locomotives	27	63.0	572,321	37.0	35,113	9,729,469	351,131
Electrical machinery and supplies	1,553	56.7	143,581	43.3	20,118	126,495,042	13,519,736
Machine tools and metal working machinery	667	48.1	38,701	51.9	27,139	12,423,057	9,390,385
Construction, building and excavating machinery	539	59.9	71,413	40.1	16,004	23,066,503	3,456,908
Office and business equipment	309	60.5	150,850	39.5	29,042	28,209,071	3,543,186
Building material and supplies	1,200	65.9	42,332	34.1	9,870	33,485,057	4,036,837
Household machinery and equipment	1,320	58.5	134,496	41.5	19,368	103,965,446	10,594,448
Motor vehicles and accessories	1,671	42.9	459,766	57.1	44,522	329,652,642	42,474,573
Airplanes and spare parts	51	45.1	66,431	54.9	23,193	1,527,913	640,401
Musical instruments	351	57.2	83,804	42.8	34,037	16,844,795	5,105,584
Jewelry	807	57.1	42,620	42.9	14,225	19,648,080	4,921,916

*From corporation tax returns for 1924; compiled in November, 1926, by the Business Bourse, New York.

facts were exceedingly revealing. It was, of course, an "off" year, but since we are not likely to be given again a segregation of manufacture and other fields quite so detailed, the material provided should be all the more closely studied (see Table II). Among the many special lines listed, the "beverage and spice" (in reality the near-beer field) has the best showing in percentage of firms making a profit (72.3%). Next in order are meat packing, ice, gloves, paper containers, flour. Those having the worst showing are tires (1924 was this industry's low point), automobiles, tobacco; this, being interpreted, means that these industries had too many makers. The study of the profits and deficits made in these lines of trade is illuminating.

Among the lines of business showing the greatest ratio of profit to loss, for the industry, were artificial leather, 46 to 1; rubber belting, 35 to 1; cereal preparations, 30 to 1; locomotives, 27 to 1; tobacco, 21 to 1; carpets and rugs, 17 to 1; beverages (mostly near-beer), 15 to 1; bread and bakery products, 13 to 1; drugs, 9 to 1; household equipment, 9¾ to 1; electrical machinery and supplies, 9 to 1; office equipment, 8 to 1; building material, 8 to 1; automobiles, 7¾ to 1. These lines of business may be said to be the cream of the profitable businesses, with the best chance for profit, as they stood in 1924. There is no 1925 measure for them.

There were in 1924 a number of industries, unfortunately, in which the losses were actually more than the profits in the entire industry: mining, agriculture, shirts and collars, cotton goods, gloves, trunks and valises, celluloid, butter substitutes, fertilizer, shipbuilding, ocean transportation, automobile garages, private banks, loan companies, accident and fire insurance companies. The silk industry escaped this class by a hair's breadth. The farming field showed a two million dollar loss, the mining industry an 86 million dollar loss, the cotton goods industry a 40 million dollar loss. Among the industries which were three-quarters near or closer to being a loss were women's and children's clothing, cloaks and suits, marine and gas engines, machine tools, agricultural machinery, optical products.

As an indicator of volume of profit, Table II is also most illuminating, although of course some industries of a broadly basic character, like metals or steel, are not here included, since we are examining the lesser subdivisions. The motor vehicle and accessory group shows a huge preponderance of profit—329 millions of dollars; followed by printing and publishing, 153 millions of dollars, electrical machinery and supplies, 126 millions, household equipment, 103 millions, tobacco, 93 millions, meat packing and sugar, each 55 millions, candy, ice cream, and so forth, 47 millions. In a study of the largest average profit per successful firm, rubber goods leads, followed by locomotives, sugar, artificial leather, linoleum, automobiles, tobacco—all of which, it will be noted, are fields dominated by large firms. The lines showing the lowest average profit are gloves, $6,034, trunks and valises, $7,057, women's and children's clothing, $8,429, celluloid, shirts and collars, hats and caps, ice, butter substitutes, in order.

It is interesting now to make a comparison with the two previous years, in order to secure ratios of more recent change. If we figure the percentages of change in the 1925 ratio of successful to unsuccessful firms, as compared with the years 1924 and 1923, we get the figures presented in Table III.

Along the same line of inquiry, let

us examine 1925 net profits and the ratio of change over 1924 and 1923 (Table IV).

Profits in 1925 by manufacturers with less than $5,000,000 a year net income were almost 11% smaller than they were in 1923.

Manufacturers whose net incomes reached above $5,000,000 numbered only one-tenth of one per cent of the total number of 88,674 corporations. These large concerns showed *an increase* of net profit over 1923 of 25.4%. Thus, this one-tenth of one per cent of manufacturers earned 44½% of the total manufacturing income, a gain in proportion of 4.6% since 1923.

The average profit made by successful manufacturers in 1925 was $80,968, as against $70,034 in 1924, $79,411 in 1923, and $70,937 in 1922. Taking in both successful and unsuccessful manufacturers, the average net profit was $41,738 in 1925, as against $32,018 in 1922.

The total amount of the loss sustained by unsuccessful manufacturers in 1925 was $682,255,000 as against $813,413,000 in 1922. The average loss per unsuccessful manufacturer was $19,754 in 1925, and has been declining since 1922, when it was $24,074.

TABLE III. CHANGES IN RATIO OF SUCCESSFUL TO UNSUCCESSFUL FIRMS, 1925 COMPARED WITH 1924 AND 1923

	Change Over 1924 (Per Cent)	Change Over 1923 (Per Cent)
Agriculture	+ .06%	+ 5.2%
Mining	+2.1	+ .07
Food, beverages, tobacco	+ .4	+ 2.0
Textiles and products	+5.2	− 4.1
Leather and products	+3.0	+ .9
Rubber and rubber goods	+3.8	+ 9.8
Lumber and wood products	.....	−10.1
Paper, pulp, etc.	+2.5	− 2.0
Printing and publishing	.....	− 1.3
Chemicals, etc.	+1.6	+ 1.8
Stone, clay, glass	− .9	− 7.3
Metal and products	+3.6	− 3.2
All other manufacturing	+ .9	− .7
Construction	−2.8	− 1.7
Transportation, utilities	−2.0	− 4.6
Retail and wholesale trade	+1.0	− 2.1
Professional, amusements, hotels	−1.1	− 3.5
Banking, insurance	− .9	− 1.6

TABLE IV. CHANGES IN PERCENTAGE OF NET PROFITS, 1923-1924 TO 1925

	Percentage of Profit Made 1925	Change Compared With 1924 (Per Cent)	Change Compared With 1923 (Per Cent)
Agriculture	1.75%	+1.69%	−4.23%
Mining	5.38	+4.44	+4.56
Food, beverages, tobacco	3.10	− .36	−1.05
Textiles and products	3.48	+1.94	−3.02
Leather and products	2.66	+ .44	+ .16
Rubber and rubber goods	7.93	+4.62	+3.53
Lumber and wood products	4.54	+ .62	−4.83
Paper, pulp, etc.	6.03	+1.07	− .89
Printing and publishing	6.70	− .10	− .96
Chemicals, etc.	8.95	+1.43	+1.56
Stone, clay, glass	9.73	+ .18	−1.42
Metal and products	7.42	+1.14	+ .30
All other manufacturing	6.13	+ .40	−1.23
Construction	4.64	+ .84	+1.65
Transportation, utilities	12.69	+ .03	+ .66
Retail and wholesale trade	2.26	+ .20	− .38
Professional, amusements, hotels	5.75	+ .84	+ .80
Banking, insurance	12.57	+1.33	+2.53

The number of corporations in the manufacturing field reporting a deficit in 1925 was 34,537, as contrasted with 35,461 in 1924. This is a slight improvement, the 1925 manufacturers reporting a loss instead of a profit being 28% of the total.

The gross profit from sales in the entire manufacturing field went "off" almost 2% in 1925, the gross profit being 20.6% in 1925, whereas it was 22.4% in 1924. *Net* profit, however, increased 1% (6.7% as compared with 5.7% in 1924). Total expense declined from 94.3% to 93.2%. Total volume of sales dropped from 95.2% in 1924 to 93.7% in 1925.

Thus it can be seen how the sales and gross profit declined, but by intense concentration or better management, profits were bettered in 1925; showing that greater executive ability, cooperation, consolidation, and other modernizing factors are saving the situation.

These figures refer to manufacturing corporations only. If one takes all corporations in all fields of American business the situation is quite different.

In 1925, 430,072 corporations did business in America, and 177,738, or 41.3%, showed a loss, this loss totaling approximately 2 billion dollars, as against the profit of 9½ billions made by 252,334 corporations. Thus, for every dollar of profit made by successful American business, approximately 23 cents was lost by unsuccessful business firms. Gross profit averaged 16.1% as against 17.8% in 1924, and net profit after taxes 5.9%, as compared with 4.9% in 1924; the expenses of doing business being only 93.1%, as compared with 94.3% in 1924, a cutting down of 1.1% in expense of doing business. The startling and significant difference lies in the fact that the gross sales for 1925 were 79.5% as compared with 81.2% in 1924, while the receipts from other sources than sales jumped from 11.5% in 1924 to 19.2% in 1925.

As to dividends, there were $4,817,301,320 disbursed in cash dividends by the successful corporations, and 372 millions by the corporations which registered losses. This averages about $18,000 per successful corporation.

One might go on at considerable length with deductions and calculations of real value, for the authentic material for such work lies ready to be dug out from our corporation tax returns. Obviously, they must increasingly play a part in the self-knowledge of American business.

RATIONALIZATION: THE BASIS OF ECONOMIC RAPPROCHEMENT

By WILLIAM J. DONOVAN AND BETHUEL M. WEBSTER, JR.

I

AN ARTICLE entitled "International Cartels," by Robert Liefmann, the German economist, was published in the *Harvard Business Review* for January, 1927. Liefmann pointed out that before the war cartels were considered solely from an economic standpoint. Since the war the cartel movement has presented a political aspect. Cartels have come to be regarded as a means of adjusting chaotic economic conditions caused by war and the peace settlement—as a means, also, of breaking down trade barriers on the European continent.

For a time America regarded the cartel movement, as well as the development of foreign monopolies, with an attitude of indifference. Recently, however, events have forcibly directed attention to the movement. Its repercussion in the economic life of this country has been felt. By reason of the projection of foreign cartels, monopolies, and controls into this market, it has become necessary to consider, not only their effect upon industry and commerce of the United States, but also the conflict that is likely to ensue between the economic theory underlying these devices and the principles upon which the industrial and commercial progress of the United States has been based.

The problem has been considered by Congress. The House Committee on Interstate and Foreign Commerce filed a report containing definite conclusions.[1] Among other things—emphasizing the part played by foreign governments in regulating the production and distribution of commodities through cartels or monopolies, or by direct interference and restriction—it is said that not only is the governmental control usually confined to commodities of which the consumption in the country of origin is relatively small, but the regulations frequently relate to products largely consumed in the United States. The Committee finds that, although the controls are all said to be for the purpose of stabilizing the price for the mutual benefit of producer and consumer, they have brought about prices highly profitable to their producers, and some have advanced prices to an exorbitant level. Most significant of all, as illustrating the tendency, is the finding that

> This entry of foreign governments into the business and control of trading and the consequent rise in price at once compels the consumers to deal directly or indirectly with foreign governmental authorities, and sooner or later our citizens are forced to demand that their government assist in these negotiations.[2]

In at least one case the Supreme Court has been urged to hold that the activity in the United States of a foreign monopoly (participated in by citizens of the United States) raises a political and economic question rather than a question for judicial determination under the antitrust laws.[3]

[1] House Committee Hearings and Report on H. R. 59, Report No. 555, January 6-22, 1926.

[2] House Report, p. 3.

[3] *United States* v. *Sisal Sales Corporation, et al.*, 274 U.S. 268 (1926), brief for Hanson and Orth, *et al.*, p. 31.

The House Report is based to a large extent on the statements of such authorities as Herbert Hoover and Dr. Julius Klein, of the Department of Commerce. But, though the report commends the effort made by the government to abolish the objectionable controls, it is notable that the McNary-Haugen Bill, in its price regulation aspect, would have created a federal control not unlike that objected to in the case of foreign governments.[4]

In a case now pending before the District Court of the United States for the Southern District of New York, parties to the Franco-German potash cartel are charged with violation of the antitrust laws of the United States.[5] Asserting that the Alsatian potash mines are largely the property of the French government, the French have moved to dismiss on the ground that the suit is against the Republic of France.[6] Whether or not they succeed on the motion, the occurrence is significant in showing the prophetic nature of the House Report (p. 12):

> Their [the government controls] disturbing influence upon international good will cannot be overlooked and is, in fact, one of the most important objections to them. The friendly intercourse of nations would be better and more soundly based if these controls were wholly abolished.

Four reports on cartels were prepared for consideration at the recent Economic Conference at Geneva.[7] Henry M. Robinson, of California, was named by President Coolidge to lead the unofficial American delegation. After somewhat inconclusive action at the Conference, many delegates adjourned to a meeting under the auspices of the International Chamber of Commerce at Stockholm, where the question of large-scale business organization, national and international, again arose.

Thus it is apparent that the public policy of the United States, as expressed in the antitrust laws, must sooner or later come into conflict with the rapidly growing foreign monopolies and combinations. And it becomes of the utmost importance to consider, not only to what extent the antitrust laws are intended to apply to operations of such enterprises in this country, but also the serious economic and legal questions raised where there is governmental control.

II

An exhaustive historical discussion of foreign monopolies, cartels, trusts, and combinations is outside the purpose of this study, but a brief survey of a few well-known foreign enterprises is essential to a proper consideration of the application of the antitrust laws to the problem of foreign trade.

The word "rationalization" is indiscriminately applied to various forms of

[4] Senate Bill 4808. See the veto message of President Coolidge.

[5] Petition filed April 7, 1927.

[6] Motion filed May 25, 1927.

[7] See *Foreign Trade*, June, 1927, p. 393, where Yves-Guyot says, "The Economic Conference at Geneva might well be called the Conference of the Cartels, for such I believe was the real purpose its organizer had in mind when he called it together. . . ."

See Wiedenfeld, *Cartels and Combines* (Publications of the League of Nations, II: Economic and Financial, 1926, II, 70); MacGregor, *International Cartels* (Publications of the League of Nations, II: Economic and Financial, 1927, II, 16); de Rousiers, *Cartels and Trusts and their Development* (Publications of the League of Nations, II: Economic and Financial, 1927, II, 21); Grossmann, *Methods of Economic Rapprochement* (Publications of the League of Nations, II: Economic and Financial, 1926, II, 69).

In *The Final Report*, World Economic Conference (Publications of the League of Nations, C. E., I, 44, May, 1927), p. 23, it is recommended "That, when a government carries on or controls any commercial . . . or other enterprise, it shall not . . . be treated as entitled to any sovereign rights, privileges, or immunities. . . ."

large-scale European business combinations. In essence, the word stands for joint action to accomplish specific business purposes. And the usage, of course, is misleading, for the reason that the object of any particular combination of assets may have no relation to a general or public good; the purpose may be wholly selfish, wholly detrimental. Because combinations are useful and familiar economic expedients, it is now thought that they are part of the eternal order of nature—hence "rational."

The use of a single word to describe a highly complex situation has another unfortunate result. It satisfies a lazy mind and precludes critical analysis and clear thought. It is not sufficient merely to say that rationalization represents simplification, standardization, and stabilization. The truth is, business enterprise may be "rationalized" and at the same time take the form of a trust, a cartel, a syndicate, a loose association, a monopoly, a concern, a mere corporation. The organization may be national or international, benevolent or harmful, temporary or permanent. The features of "rationalization"—including forms, scope, and purpose—vary in accordance with the conditions in each industry and each enterprise. And the effects of joint action are almost too numerous and complex to ascertain or enumerate. It is safe to say that no generalizations as to cause, form, or effect are or ever will be wholly reliable.

The cartel, the trust, the concern, and other forms of business organization, monopolistic or limited in purpose, must be regarded and studied as phenomena of a lusty, prosperous industrial era, an era vigorously struggling to meet the economic consequences of a great war. And Americans must be willing to consider particular cases before they pass judgment. It may be that the activities in the United States of a particular combination or monopoly menace fundamental principles on which the antitrust laws are based, yet it is possible that certain forms of European business organization furnish examples of efficiency of production and conservation of resources which Americans may legally and profitably accept and imitate.

III

A cartel is a horizontal association of enterprises for a common economic purpose.[8] In the case of international cartels, the association may include independent business units or a combination of business units and national cartels. The purpose is monopolistic, but in few instances is monopoly obtained. The cartel aims mainly at economic stability and seeks to achieve its object, often at the immediate expense of the consumer, by exchange of information and resources, by division of markets, by fixing prices, and by limitations on production and distribution.[9]

The Franco-German potash accord, most unique of all cartels, is a direct outgrowth of postwar conditions. Members are the Deutsche Kalisyndikat Gesellschaft, the highly organized compulsory union of German potash producers, and the Société Commerciale des

[8] See Liefmann, "International Cartels," *Harvard Business Review*, January, 1927.

[9] In "Cartels and Trusts," *Foreign Trade*, June, 1927, Yves-Guyot, representing the individualistic school, says:

". . . Cartels are organized to increase and control the markets by restricted and definitely defined spheres of activity or quotas."

". . . The Germans, who invented the cartel . . . , seek to abolish the axiom proclaimed by Adam Smith, 'In an open market where competition exists the sale price has always a tendency to approximate the cost price' . . . "

". . . The cartels share the military idea that an individual is merely a means to an end."

". . . The trust represents abundance, the cartel represents restriction."

Potasses d'Alsace, a corporation largely owned by the Republic of France.[10] Extensive properties were developed by the Prussian government as early as 1858, and by syndication of private interests, at first voluntary and later compulsory, Germany had acquired a virtual monopoly of the world's potash supply by 1914. A number of the most valuable mines are located in Alsace and became the property of the French after the treaty of Versailles. Before the war, Alsatian mines, which, though less numerous, are richer than the German properties, were limited to 5% of the total production. But the French output, freed from restriction, materially increased after 1919 and by 1924, as a result of a vigorous sales policy, seriously threatened the monopolistic position of the German syndicate.[11]

Certain natural economic advantages —character of soil, distance to shipping points, and availability of cheap fuel— put the Germans in a strong position to negotiate. The cartel of August, 1924, was designed to effect peace in the American market. By its terms Alsace was allowed 37½% and Germany was allowed 62½% of American sales for a period of three years; prices were fixed, and the parties agreed to share the expense of a selling campaign.

The agreement is said to be unique in three respects:[12] it involves monopoly of an essential raw material, it applies only to sales in the United States, and of the parties one is a state and the other is a syndicate controlled by a foreign power.

An amended cartel, with an elaborate geographical division of sales territory, was instituted in May, 1925 (and made permanent a year later), for the purpose of extending the 1924 accord to the markets of the world on a 70-30 participation basis, and each of the members has guarded itself against competition in its own market (including colonies) by appropriate reservations. Most important, there are provisions for limitation of production and fixing of prices.

American selling agencies of the two countries have recently been abolished, and a Dutch corporation has been established as exclusive sales agent, in America and elsewhere, of the joint undertaking. Representatives of the Dutch corporation are now engaged in soliciting business in the United States.

The German potash syndicate itself is perhaps the best example of "rationalization" in the form of elaborate national syndication.[13] Restriction of production is said to have been compelled by overexpansion on the part of ambitious, competing private interests, and the process of syndication, to limit production and fix prices, which began as early as 1889, has continued with few interruptions down to the present time.[14] The pioneer members of the syndicate, realizing the advantages of greater production, followed an aggressive sales policy in the American market. De Rousiers concludes that, to capture the American market, the potash syndicate organized a skillful system of dumping and export premiums, which resulted in higher

[10] See Hoar, *Potash, Significance of Foreign Control and Economic Need of Domestic Development* (Department of Commerce, Trade Promotion Series, No. 33, Government Printing Office, 1926), an exceedingly valuable survey of the potash situation; Liefmann, "International Cartels," p. 139.

[11] "Between 1919 and 1923 the French exportation of the basic potash content to us rose from 26,700 tons to 72,000 tons." See *Saturday Evening Post*, January 16, 1926, p. 17.

[12] Hoar, *Potash*, p. 37.

[13] Wiedenfeld, *Cartels and Combines*, p. 11; Hoar, *Potash*, pp. 1-36.

[14] Wiedenfeld, *Cartels and Combines*, p. 12; de Rousiers, *Cartels and Trusts and Their Development*, p. 13.

prices in Germany than abroad.[15] In 1909, after a decade of bitter internecine strife, attributable to growing pains in the industry itself, the syndicate disintegrated, and sales at competitive prices, covering deliveries for 7 years from January 1, 1910, were made to American buyers. But, in spite of vigorous protests on the part of the State Department, American fertilizer interests, and the sellers, these contracts were rendered valueless, the price of potash being doubled by the tax features of the law of 1910; and the potash industry went over to absolute governmental control.[16]

Obviously designed to discriminate against American purchasers, in the imposition of prohibitory export taxes, the elaborate quota provisions of the new law, instead of rationalizing and limiting production, induced further speculation and led to an unprecedented carnival of waste. Subsidiaries were formed to prevent reduction of allotments; properties were divided to increase quotas; shafts were indiscriminately sunk. Meanwhile, the Imperial Government was given enormous stategic power, which was exercised in favor of domestic buyers. And American consumers paid (and still pay) the overhead expense created by the uneconomic features of the law.

By the Potash Law of April 24, 1919, the control of the industry is vested in the Kalirat, a representative federal council, which has power to fix domestic prices, determine production quotas, and regulate the industry. Stringent disciplinary measures are provided. The potash syndicate, now a compulsory union of all producers, is exclusive sales agent for the industry, with power to fix export prices. The Federal Minister of Economy, who participates in the control of the industry, is empowered to reduce domestic prices and to grant exceptions to the regulation that domestic prices shall not exceed export prices.

The syndicate itself is dominated by two blocs, one favoring drastic price reduction and limitation on inefficient units. Proposals to reorganize the industry, now divided into concerns, into a trust, like the German dye trust or the United Steel Works, are pending. This indicates dissatisfaction in the syndicate itself with the potash law, which would be superseded if such combination were effected. The consolidation into a trust, it is urged, would be in the interest of efficiency, since the 1919 law fosters unproductive properties. In compliance with a supplementary law, one-fourth (about 57) of the unprofitable shafts have been closed for a 30-year period. It is estimated that consumers annually pay between 50 and 70 million marks in the form of compensation to owners of shafts closed pursuant to the restrictive policy.[17]

IV

Faith in the current Continental economic philosophy favoring formation of international cartels has been expressed by August Diehn, director general of the potash syndicate, in the following language:

[15] De Rousiers, *Cartels and Trusts and Their Development*, p. 12.

It is interesting to note that the plaintiff now asserts, among other things, that the potash syndicate has placed itself in a position to charge discriminating prices.

[16] Feeling against the syndicate and the discriminatory tax was intense. Attorney General Wickersham, considering the practicability of a grand jury investigation, concluded that the operations of the syndicate in the United States, pursuant to an arrangement to fix prices and end competition, were subject to the jurisdiction of the United States Courts. (31 Opinions of the Attorney General, 545.)

[17] A recent tabulation shows that only 63 out of 224 quota-bearing shafts are in actual operation.

> I believe that the economic interests of Europe are best served by coordination such as is represented in the Franco-German potash understanding. England, of course, fears Continental economic solidarity. It has been her bugbear for years. She objects to the potash combine in the same way that she will oppose the Franco-German iron and steel arrangement. It is a groundless fear, because by applying the same process of close consolidation to her own industry she could easily work out her economic salvation.

Again, Mr. Diehn says:

> Like every other German interested in potash, I realized that competition would ruin the business. I found that the French felt the same way. . . . I am convinced that the potash understanding is a precedent for other industries, especially iron and steel.[18]

The trend of contemporaneous business policy is epitomized in these statements. And, in the progress in potash production and distribution, one may trace the evolution of Franco-German, and particularly German, industrial development. Taking a hint from America, the movement in Europe is from loose associations of autonomous concerns or corporations to trusts, closely organized and efficient; from local consolidation to international agreements, if monopoly or reciprocal advantages can be obtained. To borrow the French expression of a German economist, this is the underlying basis of European economic *rapprochement;* for business consolidation can proceed to a large extent independent of sluggish political movements.

The cartel is in no sense primarily a postwar expedient. To it has been attributed the economic stability existing in Germany during the early decades of the twentieth century. It is said that the Rhenish-Westphalian coal syndicate, the coke syndicate, and similar organizations served to avert the unfortunate results of a crisis in 1909. Liefmann says:

> They acted as moderators, checking the rise of prices during the peak of the market, while they did not suddenly and sharply decrease prices during the decline. This was of indubitable benefit to the industries using their products and the whole national economy.[19]

Liefmann cites the Neckar Salt Association of 1860, to which producers in Württemberg, Baden, and Hesse belonged, as the first international cartel. Luxemburg and Lorraine belonged to the Pig Iron Association of 1879. The first international rail cartel was formed in 1884. A close selling syndicate of steel purchasers in Germany, Belgium, England, and France was established in 1904, after the organization of the German steel syndicate. The American mills were admitted to the syndicate in 1905. Orders were received at a central office in London and divided according to an agreed ratio of participation, the members reserving their own markets and agreeing as to the exploitation of others.

Cartels between pipe producers, including Americans, for reservation and division of territory, existed before 1905. Manufacturers of various steel products—bars, pipe, rolled wire, and so forth—in Germany, Austria, Belgium, and England, were associated in cartels as early as 1904.

Wood screws and enamel ware have long been subject to cartel regulation. Price and territorial restrictions on English, French, and German manufacturers were accepted in the 90's, and the agreements have been renewed in various forms since the war. One of the largest of such cartels was the Association of Enamel Works, with 45 factories in Germany, Austria-Hungary,

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[18] Quoted in *Saturday Evening Post,* January 16, 1926, p. 123.

[19] Liefmann, "German Industrial Organization Since the World War," *Quarterly Journal of Economics,* November, 1925, p. 82.

Switzerland, France, and Italy, founded in 1906 for the purpose of fixing prices and terms of sale.

In the metal and mineral industries, such as zinc, copper, lead, glass, and aluminum, there are a great many cartels of international scope. And the same can be said of the entire chemical industry. The most important producers of acetic acid in nine European countries are so organized, with a central office at Frankfurt am Main. International cartels to control commerce in soda, hypophosphates, wood dye extracts, and various pharmaceutical products have been renewed since the war.

A holding company, the Borax Consolidated Company, uniting 12 enterprises with plants in England, the United States, Germany, France, and Austria, practically controlling the world production, was formed in 1899.

Cartels to regulate the production of watch parts, incandescent lamps, various textiles, and a multitude of important commodities, to say nothing of cartels affecting shipping itself, can hardly be mentioned, except to say that they have long been familiar and possess a significant relation to the question of foreign trade.

The development of cartels has also been one of the outstanding features of postwar economy. This is due to the political division of economic areas, such as the cession of Alsace-Lorraine to France; to technical progress in industry itself; to increased competition, partially accountable to falling exchanges; to impoverishment of countries having large productive capacity; to the temporary and unsatisfactory character of attempted political adjustments; and, finally, to self-interest and greed on the part of capitalists to whom the war was an annoying interlude.

The Phoenix Company, an international incandescent lamp cartel, aiming at restriction of competition, is typical of the rapid growth in size and number of cartels since the World War. The German industry, which was closely consolidated in 1919, has joined the International General Electric Company of Paris, Phillips (the Dutch producer), the French Compagnie des Lampes, as well as large producers in England, Scandinavia, and Holland, to dominate the world market.

The copper syndicate, made up of North and South American, African, and German members, controls 90% of the world supply. Its primary purpose is said to be elimination of the middleman, whose uncertain methods and profits are thought to be responsible for price fluctuation.[20]

Cartels in iron, ceramic products, and other important commodities have been established between Austria and the middle European and Balkan states to circumvent the economic effect of the geographical division required by the Treaty of Versailles.

The recent West European crude steel agreement is an attempt to join French iron, Ruhr coal, and German manufacturing facilities in a manner that will practically offset the cession of Lorraine to France, the inclusion of the Saar Valley in the French customs area, and the assignment of Luxemburg to the Belgian customs area. The association, which has not yet attempted home market or price agreements, has provided an elaborate plan of limitation of production and price cutting, which is intended to continue until April 1, 1931. And it is now proposed to join Sweden, from whom Germany has been obtain-

[20] For a discussion showing that the cartel of 1926 has not had the expected stabilizing effect, see Marcus, "Six Months in the Copper Cartel," *Wirtschaftsdienst*, Hamburg, April 8, 1927.

ing large quantities of iron ore, Austria, Hungary, Bohemia, Poland, Roumania, and England, in a gigantic, all-European steel combine. England, though a member of the international rail cartel, has consistently refused to join the steel agreement—probably because of want of cohesion among her own producers of steel.[21]

The proposed chemical entente presents the most formidable example of the effort on the part of foreign interests to dominate world markets through international combination. It includes alliance of the British Imperial Chemical Company, Limited, representing 50% of the British industry, the Kuhlman holdings in France, the vast interests of the German I. G. Farbenindustrie, and the Belgian manufacturers who are now undergoing centralized reorganization to permit adhesion. It is said that definite agreements respecting production and distribution of dye stuffs have already been reached by French and German interests, and an understanding between the I. G. and Norwegian nitrogen producers is reported to have occurred. It is also reported that, while no general agreement respecting prices has yet been arrived at, a unit system for sales and distribution is being organized and quotas for production have already been fixed.

The German constituent exceeds the United States in exports; the French and British groups take third and fourth place respectively in world commerce. The aggregate yearly exports will amount to $500,000,000, in contrast with exports from the United States annually amounting to $171,000,000. The entente will represent a combined capitalization exceeding $1,000,000,000.

It remains to be seen whether the combination can avoid the abuses which colossal concentration of economic power makes possible. In any event, such an entente presupposes commercial treaties and tariff concessions specifically relating to the chemical industry—which illustrates the extent to which foreign governments are engaged in the promotion, protection, and control of private enterprises.

V

Although monopolistic organizations of entire industries doing an international business have rarely occurred, the European cartel movement has been accompanied by a tendency toward vertical trustification along lines suggested by American industrial development. Combinations of this character took place in the iron industry, where manufacturing could be successfully added to mining and milling operations under a single management.[22]

The English dynamite trust, owning plants in England and Germany, is known to have combined with American, French, Swiss, Italian, and Spanish companies to control the world market. Since the war, in the manufacture of synthetic products, such as celluloid and

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[21] Moreover, England is primarily a commercial nation, with highly developed facilities for distribution and a traditional faith in *laissez-faire* economics. Keynes, *The End of Laisez-Faire*, London: Hogarth Press, 1926.

[22] The classic example was the fusion in March, 1901, of independent units now constituting the United States Steel Corporation. This form of consolidation normally goes through three stages: first, vertical consolidation under one management of steps in production of a single article (Mixed Undertakings); second, horizontal consolidation under one management for distribution of various articles; third, horizontal consolidation of all enterprises that have reached stage 2. Wiedenfeld, *Cartels and Combines*, p. 7.

artificial silk, German explosive enterprises have followed the example of E. I. du Pont de Nemours and Company.[23] And it has been reliably reported that American interests are prepared to make territorial agreements with European enterprises.[24]

The Swedish match trust, with the aid of American capital, has consistently endeavored to obtain monopolies in various states. In this connection Liefmann says:

> State monopolies have been secured in Peru, Poland, Portugal, and Greece, while in many other countries . . . through underselling previous producers and . . . cartel agreements, it enjoys a virtual monopoly.[25]

In exchange for a loan of approximately $4,000,000, which will be used in creating an agricultural trust bank, Swedish interests have been granted a monopoly to run 25 years in Ecuador. The Swedish Match Company recently advanced $75,000,000 to the government of France; two-thirds of this amount is to be furnished by the International Match Company, an American subsidiary, through the flotation of debentures in the United States.

In the petroleum industry, where a few international enterprises control world production, internationally significant monopolistic agreements have been secured. Foreign subsidiaries of the Standard Oil Company of New Jersey finally forced European enterprises and cartels into non-competitive agreements for control of the market. Standard Oil and English-Dutch groups, combined with the Anglo-Persian Oil Company, unquestionably maintain agreements respecting production in unexploited regions.

In 1920 the General Electric Company bought shares amounting to 25,000,000 marks in the German General Electric Company (A.E.G.). Subsequent agreements, relating to exchange of patent rights and the benefits of experimental work, taken in the light of prewar territorial agreements, illustrate the manner in which highly integrated national enterprises tend to combine for increased efficiency and domination of markets.

The Radio Corporation of America, owning or controlling practically all the commercially available patents for the manufacture of radio apparatus, holds valuable concessions for radio communication between the United States, South America, Asia, and Europe. By agreements with the British Marconi, German Telefunken, and French T.S.F., a separate company has been formed to handle all South American communications.[26]

Another phase of German industrial development has been the formation of concerns (Interessengemeinschaft) combining control of various enterprises, usually through the device of stock ownership, in a few hands. In this manner, starting in the shipping and coal trade, Hugo Stinnes became owner and dictator in a multitude of enterprises. In the potash industry, the Wintershall and Salzdetfurth Companies represent

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[23] "A woman dressed in a du Pont fabric dyed with du Pont dyes may, in a du Pont (General Motors) automobile, finished with a du Pont lacquer and upholstered in du Pont material, ride over a road constructed with the aid of [du Pont money and] du Pont blasting explosives. In her dressing case may be toilet articles of the du Pont imitation ivory. In case she is held up it may be by a gunman using du Pont powder." If the powder is damp, the lady may live to stop at a du Pont hotel and spend the evening at movies projected from du Pont film. *New York Times*, September 4, 1927.

[24] Liefmann, "International Cartels," *Harvard Business Review*, January, 1927, p. 143.

[25] Liefmann, *op. cit.*, p. 141.

[26] *Federal Trade Commission Report on the Radio Industry.*

concerns controlling approximately 63% of the entire production.[27]

VI

In a statement to the House Committee on Interstate and Foreign Commerce, Mr. Hoover mentioned nine important commodities the production and distribution of which are directly controlled by foreign governments. There are some 20 or 30 other commodities that might become subject to state action. Mr. Hoover believes American consumers annually pay from $500,000,000 to $800,000,000 in excessive profits for long-staple cotton, camphor, coffee, iodine, nitrates, potash, mercury, rubber, sisal, quinine, silk, and other imports affected by state control.[28]

Approximately 70% of the world's rubber supply comes from the British East Indies, where legislation restricting production is in effect. When the control was inaugurated in 1922, the object was to stabilize the sale price in New York at about 36 cents a pound, or a figure assuring a steady supply for American consumers and a fair profit for colonial planters. With a normal annual importation of approximately 900,000,000 pounds, American consumers felt they had a genuine grievance when, in 1925, the average price in New York exceeded 90 cents a pound and reached the peak at $1.20 a pound. Taking 36 cents as a fair price, the annual dole of American consumers amounts to more than $500,000,000. Through a policy of conservation and development of new sources of supply instituted under Mr. Hoover's direction, the price has since been brought down to a level under 40 cents a pound.[29]

Brazil annually produces approximately 12,000,000 bags (132 pounds each) of coffee, representing about two-thirds of the average commercial yield of the world. In 1906, 1918, and 1921, the government bought and stored large quantities of coffee, which were finally released at a huge profit. In each instance, although the avowed purpose was to stabilize the market, the price in all grades soared subsequent to the purchase. More recently, instead of storing coffee in distant ports, the government has provided facilities for storage and has restricted export supplies at the source. Partly because of diversion of importation, since January, 1925, the price has fallen from about 30 cents to 22 cents a pound, which has resulted in a net annual saving to American consumers of more than $100,000,000.[30]

Three times in the last ten years, for the purpose of inflating the price, the Egyptian government has successfully undertaken to restrict the long-staple cotton acreage.[31]

For a period of 15 years the American farmer has paid tribute amounting to about $8,000,000 a year to the Mexican sisal monopoly and its exclusive American representative. Since sisal is practically indispensable in the manufacture of binder twine and since about 75% of the world's supply comes from Mexico, it may readily be seen that a monopoly existing under the umbrella of government control can place American farmers and consumers at its mercy. One of the features of sisal control has

[27] The extent to which this type of combination (well known to Americans) developed in Germany and the evils to which it is subject—stock manipulation, overcapitalization, and the like—is described by Liefmann, "German Industrial Organization," *Quar. Jour. Econ.*, November, 1925, pp. 93-98.

[28] *Hearings*, pp. 2-3.

[29] *Hearings*, pp. 8-23.

[30] *Hearings*, pp. 23-27.

[31] *Hearings*, pp. 27-28.

been the cooperation of American and Canadian banks in making the control effective and maintaining the price at an exorbitant level.[32]

Four of the eighteen directors of the Chile Nitrate Producers Association, which embraces all but two producers, are appointed by the President of Chile. Export taxes paid on Chilean nitrate, representing 20% of the sales price, cost American consumers about $11,000,000 a year. Moreover, the Association, which is largely controlled by British and Chilean interests, subject to state action, has consistently followed a policy involving restriction of production and fixing of prices. America has been backward in the development of coal by-product and atmospheric nitrogen, with the result that more than 90% of the American supply is subject to controls exercised and fostered by a foreign government. Since 1894, iodine, which is a by-product of nitrate, has been controlled by the Combination de Yodo, an organization closely connected with the nitrate association. The average annual American importation of 600,000 pounds (about three-fifths of the total Chilean production) is subject to price, sales, and quota agreements and restrictions sanctioned by the government of Chile. C. C. Concannon, chief of the Chemical Division, Department of Commerce, estimates that the production of iodine could be increased about 20-fold under competitive conditions.[33]

While licenses to produce camphor may be obtained from the state, refining operations are carried on exclusively by the Japanese government. A governmental control which has existed in Formosa, the chief source of supply, since early in the eighteenth century was continued by the Japanese government after its acquisition of Formosa.[34]

Quinine is another commodity produced and distributed under state monopoly. About 90% of the world's supply of chinchona bark comes from the Dutch East Indies. Growers, manufacturers, and distributors have been continuously bound by conventions affecting prices and production, the last of which expires December 31, 1928. By agreement between growers and manufacturers, the quantity of bark that will be accepted from each plantation is fixed. The factories are bound to accept not less than a certain amount from each grower, and a maximum quantity which the growers may be compelled to furnish is likewise stated. Under an arrangement with the Dutch, estates owned by English interests turn over their entire supply for manufacture in England. Since Japanese interests are now allied with the Dutch manufacturers' combine, the production from German plantations, most of which goes to the Japanese, is now subject to producers' regulations. The Kina Bureau, Amsterdam, is trustee, clearing house, and exclusive agent for all manufactured quinine. Attempts of American buyers to secure independent sources in Java and Sumatra have been fruitless, for the Dutch control is so stringent that independent growers fear loss of financial resources if they enter into competitive contracts, while buyers dealing outside the Bureau will unquestionably be blacklisted and cut off from all sources of supply.[35]

VII

The economic devices discussed in the preceding pages would, in almost every

[32] *Hearings*, pp. 28-29.
[33] *Hearings*, pp. 30-32.
[34] *Hearings*, p. 32.

[35] For a general survey of the quinine trade, see *Commerce Reports*, Trade Informational Bulletin No. 273, 1924.

case, be offensive under the economic policy to which this country is committed by the antitrust laws; for in each instance there is an attempt to eliminate competition by agreements respecting markets, prices, and production. And the fact that prices have not been raised to an unreasonable level in given instances does not affect this conclusion.[36]

It is for economists to show that such combinations and controls are proper mechanisms for adjusting the social interest in conservation of the world's resources with the immediate human interest in procuring the world's goods at the lowest possible cost. It may be said that the genius of American industrial development consists in correlation of raw materials with manufacturing and distributing processes, with a view to securing the advantages of mass production and sale and the complete elimination of inefficient units. And there is highly respectable authority for the view that the proper enforcement of the antitrust laws—permitting integration of supplementary units and forbidding noncompetitive agreements tending to keep alive inefficient units—substantially contributes to this economic accomplishment.

In the case of cartels, the emphasis is usually on market control, and individual units are permitted to organize and operate free from restrictions or cohesion. This inevitably leads to protection of inefficient operations at the expense of consumers, and, if the cartel is comprehensive, it discourages potential competitors, who are unable to enter a fight for markets against the massed resources of the cartel. In America, with the checking of abusive monopolistic practices, there is always a chance for a strong-willed competitor.

Moreover, in reference to one argument constantly advanced in favor of cartels, the cartel method has not generally had a stabilizing effect; for, with internal dissension and changing conditions, except in cases of direct governmental intereference or compulsion, short-lived cartels have been unable to maintain permanent control of markets. It is reported that in the Steel Entente there is constant danger of dissolution because of the alleged excessive demands for increased quotas on the part of Belgian and French producers. Since Germany and France must dispose of a large excess production in the world market, this portends a demand for erection of additional tariff barriers in the United States and elsewhere as a measure of defense against dumping and other offensive features of a free-for-all sales campaign.

VIII

"Rationalization"—speaking of cartels, trusts, concerns, and other combined attempts to secure economic dominance—was firmly embedded in the economic life of nations long before the Treaty of Versailles. More recently it has been a means of securing regeneration of economic vitality in the face of chaotic political conditions. To a marked extent, business men have succeeded in restoring seemingly amicable relationships where politicians and diplomats have only blundered and failed. Nevertheless, agreements and combinations between citizens of more than one country for joint action in respect to essential commodities is grounded so largely on suspicion and self-interest that it is impossible confidently to predict the continued success of such arrangements. In this connection, the

[36] *United States* vs. *Trenton Potteries Company, et al.*, 273 U.S. 392 (1926).

potash accord, the steel and chemical ententes, and similar efforts at economic solidarity will be watched with the greatest interest on both sides of the Atlantic.

The cartel movement appears to be subject to a natural economic corrective. The cartel nourishes inefficient units at the expense of consumers. It compels efficient properties to operate below the level of industrial capacity and individual ambition. It enables its members to dump products in foreign markets in order to obtain commercial dominance in such markets—which leads to anti-dumping tariffs, trade wars, and exorbitant domestic prices. The international cartel is of doubtful value as an agency of peace. Non-member countries are frequently antagonized. And when dissension occurs—as it often does—in the cartel itself, there is misunderstanding and rancor between participating countries. Moreover—and from the American standpoint this is the most significant objection—the cartel form of business association leads to governmental control in business. So that, even abroad, where the cartel is functioning, there is evidence of fear that governmental participation, originally looked to for reasons of protection, may now expand in the direction of nationalization of resources.

In Germany, where there are said to be approximately 3,000 cartels, there is a distinct tendency to consolidate related enterprises on the American pattern under unified management. This is a concession to the American view that consolidation has a legitimate place in the development of industry. Consolidation may correct the evils of destructive competition; it may be a means of adjusting the relation between production and consumption, supply and demand. Yet in European countries, where there is no adequate check on the abusive practices growing out of overcentralization, consolidation may also lead to more extensive governmental participation in business and, possibly, to governmental ownership; for colossal enterprises possess a power of which the state itself is jealous.[37]

In the larger industries, while cartels of national or international scope are maintained for certain purposes, there is a tendency toward formation of blocs or concerns or trusts within the cartels themselves. Depending on capacity or resources, the aims of the units may differ. The larger and more resourceful units often object to a cartel policy devised to protect weaker members. In the case of potash, steel, and coal, the government has had to intervene to prevent disintegration of the cartel. And in many instances, to attain greater efficiency and power, there has been a process of absorption and consolidation in the cartels which resembles in its essential features the formation of trusts in the United States during the early years of the present century. The structure of the units forming the chemical entente, the Wintershall-Burbach combination in the potash syndicate, and the Vereinigte Stahlwerke in the steel cartel illustrate this tendency.

The principle of competition has been embodied in the law of the United States, not simply as a rule of business conduct, but as an expression of a philosophy of human relationship. It is based to a large extent on a deep-rooted fear of industrial tyranny. Those consolidations which are formed for the purpose of obtaining a monopoly, or which, as a direct or natural consequence

[37] An able defense of the cartel as an economic device is contained in Spitzer, *Rationalization and Cartels*, International Management Institute, Geneva, 1927.

of their organization and practices, result in monopoly, are condemned as violations of law. And all agreements tending to restrict competition unreasonably are likewise condemned.

Governmental controls relating to essential commodities must be considered as a phase of the movement for "rationalization," since such controls contemplate stabilization through restraint on production and competition. In some instances, control has been exerted to freeze and prevent the dissolution of a control which first came into being by private agreement. On some occasions the state has intervened and established a control to prevent economically disastrous competition. To a lesser extent, governmental control has been instituted as a conscious step in the socialization of resources and industry.

The political element introduced by governmental participation or control was considered at the Economic Conference. It was presented by the arguments before the Supreme Court in the *Sisal* case. And it has since been acutely raised on the motion to dismiss in the *Potash* case. The attitude of this government is reflected in a letter dated July 7, 1927, from the Secretary of State to the Attorney General. In considering the claim of the French defendants to sovereign immunity, it is said:

> . . . The Société Commerciale des Potasses d'Alsace, to which you refer, does not of course have any diplomatic or consular status in this country.
>
> . . . I have to inform you that it has long been the view of the Department of State that agencies of foreign governments engaged in ordinary commercial transactions in the United States enjoy no privileges or immunities not appertaining to other foreign corporations, agencies, and individuals doing business here, and should conform to the laws of this country governing such transactions.[38]

The extent to which these foreign commercial controls (legally sanctioned or actually promoted in the country of origin) are subject to the jurisdiction of United States courts when they become effective in this country is matter for discussion in a technical legal paper. In view of the decision of the Supreme Court in the *Sisal* case, however, it is believed that the activities of foreign monopolies and combinations in this market can be effectively and substantially curbed.

Sisal, the fiber of the henequen plant, which is largely grown in Mexico, is used to manufacture over 80% of the binder twine used in the United States. Through the agency of persons acting in the United States, the Mexican sisal monopoly, which was largely sustained by American banks, was extended into and became operative in this country. The strength of the decision in the *Sisal* case rests on the fact that parties named in the pleadings included a Mexican corporation and its officers, whose conduct was concededly legal under the laws of Yucatan. These parties acted in Mexico to secure and maintain a monopoly in sisal. The monopolized commodity was distributed in the United States through an exclusive selling agency, pursuant to a scheme involving domestic banks, corporations, and individuals, as well as the Mexican corporation and its officers.

In considering the sufficiency of the Government's pleadings in the *Sisal* case, the court held:

> Here we have a contract, combination, and conspiracy entered into by parties within the United States and made effective by acts done therein. The fundamental object was control of both importation and sale of sisal and complete monopoly of both internal and external trade and commerce therein. The United

[38] *United States* v. *Deutsches Kalisyndikat Gesellschaft, et al.*, Government's brief on motion to vacate process, p. 65.

States complain of a violation of their laws within their own territory by parties subject to their jurisdiction, not merely of something done by another government at the instigation of private parties. True, the conspirators were aided by discriminating legislation, *but by their own deliberate acts, here and elsewhere, they brought about forbidden results within the United States. They are within the jurisdiction of our courts and may be punished for offenses against our laws.*[39]

Moreover, appellees are engaged in importing articles from a foreign country and have become parties to a contract, combination, and conspiracy intended to restrain trade in those articles and to increase the market price within the United States. Such an arrangement is plainly denounced by Section 73 of the Wilson Tariff Act, as amended.

It is believed that this language is authority for the view that foreign corporations and individuals are subject to the antitrust laws when they participate in an enterprise that would be offensive under those laws, however innocent their conduct may be in the country of domicile, if the enterprise relates to interstate and foreign commerce of the United States and involves the performance of acts tending to make the enterprise effective in this country.

While the suggestion of retaliatory legislation as a means of resisting foreign controls has been temporarily rejected,[40] the extension of credit by American citizens has been definitely opposed by the Committee on Interstate and Foreign Commerce. Conservation and use of synthetic substitutes have been successfully urged. Related to this is the suggestion that the Government aid consumers in obtaining independent sources which cannot be brought under foreign governmental control. In substance, the recommendation of the Committee simply embodies an approval of a policy already developed in the Department of Commerce. For, in connection with the copper, potash, quinine, and other situations, the surveys and other assistance of the Department have proceeded along this line.

To a limited extent, the Webb Export Trade Act is used by American business men in meeting the competition of foreign controls. It permits merchants to combine, to fix prices, to divide sales territory, if such combination and practices relate solely to and are not unfair as between concerns doing an export business. This is simply a decent recognition of the fact that in regions where antitrust laws are not in force American business men should be able to compete on a favorable basis with "rationalized" undertakings. Legislation expressly permitting collective buying abroad has been proposed in the form of an amendment to the Webb Act.

It is believed that the most effective weapon of American interests may be the trade association. This device has been made legally available, and its limits have been defined by a line of Supreme Court cases ending in *Maple Flooring Manufacturers' Association* v. *United States* and *Cement Manufacturers' Protective Association, et al.*, v. *United States.*[41]

Related enterprises wishing to cooperate may now follow a charted course in the direction of thoroughly scientific operation. The law permits the free exchange of all pertinent commercial information—past prices, costs, freight rates, stocks on hand, volume of business, and credit data. This leads to scientific operation of economic laws;

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[39] Italics ours.

[40] "Retaliation by the United States against these governmental controls was not given serious attention by the Committee and will not be except as a last resort." (*Report*, p. 15.)

[41] 268 U.S. 563, 588 (1924). *United States* v. *Trenton Potteries Company, et al.*, 273 U.S. 392 (1926), should also be considered in this connection.

for, while it allows cooperative dissemination of the actual facts on which sound economic progress is grounded, it leaves individual initiative and ingenuity and vision absolutely free to seek the rewards of efficient effort. Voluntary exchange of commercial information and opinions tends to preclude petty individualistic suspicion and jealousy. And the trade association provides for elimination of the waste of overproduction, since, on the basis of comprehensive information, producers may scientifically gauge the requirements of the market. And, obviously, it does not involve the waste occasioned by protection of inefficient operations, since selection of markets, extent of production, and fixing of prices is voluntary rather than compulsory, and occurs by exercise of individual judgment instead of by compromise and agreement. Having all available facts, using independent judgment, maintaining a thoroughly efficient plant, the member of a trade association may expect exactly the reward to which the operation of economic laws and individual wisdom entitle him, while the improvident, unwise, or inefficient producer is inevitably and properly eliminated from the field of competition.

Judging from the *Sisal* case, one may reasonably predict a continued enforcement by the courts of the laws relating to freedom of competition. The existing body of law provides a potent defense against the abusive operations of foreign monopolies and governmental controls, as well as against all private efforts to exploit this market by private arrangements restricting competition. And, on the positive side, in the Webb Export Trade Act and the law of trade associations, American interests have instruments enabling them to compete on a favorable basis in the markets of the world.

THE UTILIZATION OF WATER POWER IN FRANCE

By RAOUL BLANCHARD

IN ANY study of the evolution of water power installations and the effect of hydroelectric power upon certain industries, it must be recognized that different methods of constructing hydroelectric plants have been evolved through the necessity for solving individually the water power problems in the varied types of French mountains.

1. *The Alpine Solution of the Problem.* The utilization of water power began in the Alps, near Grenoble, in 1869.

The Alps are greatly favored in respect to water power. First, they present along the valley frequent precipices which allow an easy use of the head of pressure within a very short distance of the point where the water is dammed up. Secondly, the rivers contain large and fairly regular quantities of water, because precipitation is considerable, and also because many of the rivers receive the waters of extensive areas. Lastly, these mountains are crossed by deep and wide valleys, where communication is easy, thus permitting the installation of factories in the very heart of the Alps.

Thus the Alpine solution is free from complications and necessitates only a low cost of installation; this is of special importance because capital investment, and especially first cost, is the dominant factor in the water power industry. Upstream, a small dam of rough stones and wood is built in the river in order to direct available water toward a canal, ending in a reservoir from which the pipes go directly to the turbines.

The Alpine solution requires thus a minimum of engineering construction and of expense, and seems to be the ideal method of utilizing mountain water power. Very early, the attempt was made to use this method in the Pyrenees and in the Central Massif, that is to say, the mountainous region of Central France. Unfortunately, neither the Central Massif nor the Pyrenees are exactly like the Alps, and in applying to these mountains the solution developed in the Alps, failures were inevitable.

2. *The Pyrenean Solution of the Problem.* The Pyrenees present great opportunities for the utilization of water power. Even though this range is less elevated than the Alps, the slopes are steep, because of the vicinity of low plains to which the mountains fall abruptly. Moreover, precipitation is abundant, especially in the center and toward the West.

But the French part of the chain presents a serious fault: it is too narrow. In consequence, the rivers in the heart of the mountains are short, about 10 to 20 miles, and the amount of utilizable water is relatively small. The use of the simple Alpine technique did not yield favorable results until the beginning of the World War. The power plants created before 1914 were almost all of low power, although the engineering expense was much greater than in the Alps. As the run-offs of the rivers were small, one was obliged to build very high waterfalls, which needed long canals. For instance, at Gesse, in order to obtain 5,000 kilowatts, it was neces-

sary to cut a subterranean canal 5 miles long; at Azzeau, on the Neste, the same power was obtained with a canal of 6½ miles; in the Alps, some plants with smaller equipment produce 15,000 kilowatts.

Thus the Pyrenees seemed to be condemned to a great number of very small power plants, a decentralization which is both expensive and unprofitable, until it became clear that these mountains had a special resource, the high altitude lakes. The utilization of these lakes gave rise to a new Pyrenean technique. Such lakes are found along almost the entire chain in great numbers; for instance, 50 in the Carlitte massif, 56 in the Neouvielle massif. Being very deep, often more than 300 feet, and possessing a great amount of water, varying from 6 to 20 million cubic meters, these lakes are also located at a very high altitude, from 5,500 to 7,500 feet. They are, therefore, splendid water reserves, capable of furnishing regular power.

But it was necessary to undertake difficult construction. To be able to command water reserves as large as possible, one must erect a dam above the rock barrier to raise the water level, and a tunnel must be cut at the base of the rock barrier to permit the drawing off of water to the lowest possible level. Then a canal must be built, and, finally, the tubes descending to the turbines, which have to be very long because the fall is necessarily extremely high. These installations are necessarily expensive, since they are made at high altitudes, only during 5 to 6 summer months, in conditions unpleasant for the laborers, and with expensive transportation of raw materials and food. Thus the utilization of high altitude lakes is necessarily more expensive than the Alpine technique.

But the Pyrenean solution of the problem gives good results. First, it allows the utilization of water power with efficiency in a country lacking coal and oil. Secondly, the water power thus obtained has more value than that obtained by the Alpine method, because the reserve lakes prevent wide variations in the flow.

Since the war, a great number of power plants have been installed according to this technique. For instance, the Eget plant is supplied by four lakes, with 20 million cubic meters of available water; the canal is 6 miles long, and the head is 2,500 feet; the developed power is 10,000 kilowatts. Down stream, another plant, St. Lary, has been built according to the Alpine method, but this Alpine plant, with 10,500 kilowatts, operates with efficiency only because of the regulated flow of the first, the Pyrenean plant.

3. *The Solution of the Central Massif.* The difficulties of supplying water power were still greater in the Central Massif. These central mountains are low. The rivers present less steep and more irregular slopes. The best supplied river of the Massif, the Cere, has only one-half of the flow of the best supplied Alpine rivers. The flow, moreover, is extremely irregular, because of the lack of snow and ice reserves.

These conditions were rather discouraging. But the region needed power very badly. The industrial groups, therefore, were obliged to try to utilize the rivers. It was impossible to remedy the lack of water, but the moderate slopes and the irregularity of flow both could be corrected by one remedy, the high dam, a gigantic obstacle 100, 200, or 300 feet high, blocking the valley and changing the valley into a lake.

It is true that this solution of the problem does have certain faults. Because of the magnitude of the construc-

tion, the cost is very high; the cost is further increased by the expenses involved in the upstream submersion of the valley. There is the possibility that the reserve lake may be quickly filled up with sediment, thus losing its efficacy; another danger is the breaking of the dam, producing terrific disasters down stream. Fortunately, these disadvantages were of comparatively little importance in the Central Massif. Almost all the valleys here are narrow, with steep sides; thus the dam requires less material for construction and is less expensive to build. In these deep gorges man has penetrated very little, and the cost of the real estate generally is low. As the slope of the river bed is gentle, even a small dam will retain behind it an enormous amount of water. Lastly, for the same reason, the rivers transport little silt, and the danger of filling up the lake does not arise until after a very long time.

As in the Pyrenees, the application of this solution was especially developed by the World War. On the Cher, on the Sioule, several dams were constructed, varying from 100 to 140 feet in height, with reserve lakes from 5 to 7 miles in length; on the Creuse, the high dam of Eguzon, 190 feet, imprisoning a lake 11 miles long, and furnishing 15,000 kilowatts; this power is used for electric traction by the Paris-Orleans Railroad Company. Two great plants are under construction on the Cere and la Truyers, others in the Rhue and the Chavanun, which will give from 10,000 to 30,000 kilowatts. Finally, great projects are under consideration along the magnificent gorges of the Dordogne river: among the projected dams, that of Chamton will be 374 feet high; the lake behind it will be 25 miles in length, containing 525 million cubic meters; the plant will give 55,000 kilowatts. Furthermore, the influence of this powerful reservoir will regularize the flow of the river, giving a minimum flow four times as great as it is today, thus exerting a favorable action upon navigation and on plants now existing or to be constructed down stream.

4. *Application of These Techniques to the Alps.* The development of the Alpine water power industry meanwhile required improvements. The irregularities in the distribution of the power had become more and more unbearable. So the idea was conceived to apply to the Alps the methods which succeeded in the other French mountains.

The Pyrenean method has been used to improve certain high lakes or to create entirely new ones. The most remarkable undertaking was that of Girotte Lake, in the Northern Alps. A tunnel, cut 300 feet below the surface of the lake through the rock barrier, allows the utilization of all the water of the lake. Below, in the valley, a power plant can be alternatively put in motion by the water falling from the lake or by power coming from another plant. At the time of high water, this foreign power, very cheap in this season, is even utilized to pump water up into the lake, through the water pipe, which thus is utilized in both directions. This device represents thus an improvement of the Pyrenean method.

The solution of the Central Massif has also been applied in the Alps. High dams, even higher than those of the Central Massif, are now under construction in the Northern Alps. In Chamton on the Romanche, a dam 295 feet high will block up the narrow gorge cut by the river through a very large rock barrier; up stream, a lake 2½ miles long will double the water supply of the winter season, enabling the 14 plants down stream to double their winter produc-

tion. The most gigantic project is that of the Sautet, on the Drac, which has been under construction since last June. Thanks to the presence of an extremely narrow and deep canyon, cut through impermeable rock, the dam will be easily built to a height of 468 feet (making it the highest in the world); it will retain behind it a lake of 130 million cubic meters furnishing a power of 40,000 kilowatts, regularizing the flow of the Drac, the power production of 4 downstream plants, and, by connection, the power production of all the plants in the vicinity of Grenoble as far as Lyons.

Thus have been created specialized techniques, each of them well adapted to the physical conditions of the different French mountains.

II. Electro-Chemical and Electro-Metallurgic Industries in the French Alps

The electro-chemical and electro-metallurgic industries present very special characteristics. They are recent, the first plants having been built in the 90's, and they are very modern industries. They are almost entirely located in the very heart of the Alps, in conditions which seem to be unfavorable for an industry of modern type. Nevertheless, they are prosperous, this prosperity being proved by the tonnage of goods and the number of workers. In order to explain this condition, we will examine successively the location of the factories, the power used, the manufactured goods, the labor conditions, and the means of transportation.

1. *The Location of the Plants.* The birth of this industry is due to the utilization of the electric power obtained from the water falls. Most of the factories were created, however, before the great progress accomplished in the transmission of power. Until 1910 to 1915, the transformers were still inferior, and the loss of power along the transmission lines was so great that all the factories had to be located as near as possible to the power plant. At this epoch, the factories were literally attached to the falls. The communes which possessed the waterfalls permitted the factories to be installed only in case the plant was placed in the municipal territories, in order to profit by the presence of the workers and by the income from taxation. Lastly, the installations were originally very small, and it seemed that the problems of transportation of raw materials and goods and the problems of recruiting labor were unimportant. Therefore, the factories did not hesitate to locate in the heart of the mountains. About twenty years ago, a new tendency began to appear; the new factories are located on the edges of the mountains nearer the railroads and in more densely populated sections.

2. *The Power Used.* If this industry uses some coal and coke, it is only as raw material, and never in order to produce steam. The electro-chemical and electro-metallurgical industries need enormous quantities of power, and consequently want to use cheap power. Waterfalls are capable of furnishing it at lower costs than plants operated by steam power. In order to compare the cost of this power with that of steam power, we note that the price of the kilowatt hour utilized by a chemical factory and coming from a power plant installed in 1921 is only from 5 to 6 centimes (1/5 of a cent), whereas a similar chemical factory located in the plains near Paris pays for its steam-power-kilowatt-hour 16 to 20 centimes (3/5 to 4/5 of a cent). As we might expect, the old factories possess great advantages, because

long since their sinking funds have been paid up completely, and they are generally in the most convenient places to make power. For instance, in Chedde, one horsepower costs only $24 for installation.

But the use of the water power presents a great fault—the irregularity of the power. For almost all the plants, the cold season is a season of low water because snow takes the place of rain. During the hot season, rain is frequent, and moreover the melting of snow and ice supplies the rivers with abundant water. Thus one can be sure that from April to October the falls supply a large amount of water, while from October to April the power plants are supplied with difficulty. In the outer Alps, where snow is less abundant, the period of high water is shorter and earlier; the summer has low water, and generally a more or less irregular supply occurs in the fall, due to the October rain. Thus irregularity is more pronounced here than in the high ranges, and this explains why the plants are especially located in the heart of the mountains. The average maximum of kilowatts utilized by the electro-chemical and metallurgic industry in the French Alps is about 335,000, and the average minimum is 114,000. The relation between these extremes is thus approximately 1 to 3. In special cases this ratio becomes smaller or larger, according to the flow of the various rivers; in the northern interior Alps, where the rivers are more regular, this ratio is only 1 to 2 or even 1 to 1.8; toward the South and in the rivers of the outer chains called Prealps, it can attain 1 to 7 or 8 or, in one plant, 1 to 11.

The industry succeeds in overcoming this handicap of seasonal power by the variety of manufactured goods and through migration of labor.

3. *The Manufactured Goods.* This industry, in fact, produces the most varied goods and unceasingly changes its fabrications, according to the needs of the market. These perpetual changes are made possible by the tools. In each of the three great classes of operations, wet electrolysis, dry electrolysis, and thermo-electric processes, the apparatus adapts itself quite easily to various fabrications. Thus it is possible, in the seasons when power diminishes, to devote all the available apparatus to the one product, and, when the supply of power again becomes abundant, to take up once more the diversified products temporarily abandoned. Lastly, it is always possible to accumulate large stocks during the high water season and to sell them during the winter.

Among the most largely manufactured goods is aluminum. But it is a very special process, requiring special equipment not to be utilized for other manufactures; moreover, the fabrication here cannot be suddenly stopped. Thus every aluminum factory must add another product. Therefore, the aluminum plants manufacture at the same time electrodes, or calcium carbide, or compounds of chlorine, the manufacture of these products being suitable for the utilization of the fluctuating supplies of power.

On the other hand, iron alloys (with manganese, silicon, chromium, tungsten, and many other elements) represent very simple, easily interchangeable processes, the most convenient for the variations of power. Together with aluminum, these alloys comprise the largest part of the production of this industry.

The fourth group includes the production of soda and chlorine and various compounds of chlorine, enabling the plant to adapt itself to the demands of the market and to the variations of

power, and serving once more as a means of facilitating a constant production of other manufactures, such as aluminum. On the other hand, certain factories produce sodium, magnesium, cerium, and even synthetic precious stones, rubies, topazes, sapphires, manufactured in the form of glass stoppers and becoming real precious stones after being cut and polished.

Lastly, four great factories produce electrically steel and cast iron; several others manufacture the most varied goods, abrasives, such as corundum and carborundum, nitric acid from the atmospheric nitrogen, phosphorus, and electrolytic iron. The industry has thus adapted itself to the irregularity of the power supply. The conditions of labor cooperate toward the same result.

4. *Labor Conditions.* At first glance, it seems that these conditions would be wholly unfavorable. For labor in the mountains is insufficient, and the variations in the power supply make necessary the discharge every winter of a certain number of workers. With regard to the shortage of labor, the lack of population in the mountains is the more striking because often several great plants are located at the same place, such as in the Maurienne and Romanche valleys. Moreover, the World War largely diminished the available number of men. Lastly, the eight-hour day is strictly observed. With regard to the power supply, the diminution of power occurs, during the winter, precisely at the time when the workers, who are at the same time little farmers, are available for work in the factories; during the short summer of the mountains, they prefer to abandon work in the plant for their fields. For these reasons it would seem that industry would face a most unfavorable labor situation.

Fortunately, these inconveniences were overcome by the wide use of foreign labor. In fact, only one-half of the available labor is French. The other laborers are foreigners. The most numerous are the Italians, coming especially from Piedmont, excellent workers, conscientious, industrious, and steady. In several factories of the Maurienne valley, where the industrial congestion is most pronounced, one can find from 70% to 80% of Italian workers; without their presence, the electro-chemical and metallurgic industry would be impossible. After the Italians, we find the natives of North Africa, especially from Morocco and Algiers, about 12% of the foreigners, and very useful for the work about the furnaces. Lastly, we find Spaniards, some Chinese, Annamites, Czechs, Servians, Austrians, Belgians, Rumanians, Hungarians, Egyptians, Somalis, English, and Swiss; in all, there are exactly 22 nationalities represented.

Thanks to this flood of foreigners, the industry makes up for the lack of French workers and can also adapt itself to the variations in the power supply. Many foreigners go back to their homes during the winter; during this season, at least 25% of the laborers leave the factories for from 3 to 5 months, and many come again in the spring.

5. *Means of Transportation.* The problems of transportation present other difficulties. The annual tonnage of raw materials and of manufactured goods of these industries exceeds 1,100,000. Some, such as lime, anthracite, and coke, are found nearby. Some others come from long distances, such as ores, from Africa, India, America, oil coke (for electrodes) from the United States, and the cryolite from Greenland. Fortunately, the manufactured goods, except chemical products, are generally light goods, that is to say, of great value in proportion to their weight; but they

are shipped long distances. For instance, the abrasives go to England, Belgium, Italy; the precious stones to Switzerland and India; the alloys to Germany, England, Belgium, Austria, Hungary, Czecho-Slovakia, and even to the United States; the chemical products go practically everywhere. Thus the problems of transportation are great. The industry must adapt itself to these conditions; the factories established on poor transportation lines work only on the raw materials easily found in the immediate vicinity, and more and more the factories tend to locate on the edge of the plains. Such, for instance, is the case with the big new factories created since the war at St. Auban, Jarrie, Brignoud, and the future aluminum factory of Pont de Claix, which will be the most powerful in the world.

In short, the electro-chemical and electro-metallurgic industries of the Alps are entirely based upon electric water power. They experience some inconveniences with the labor conditions and the means of transportation, but they remain strongly attached to the mountains, because the mountains alone can furnish the abundant and cheap power which they need.

III. Paper Manufacture in the French Alps

The manufacture of paper is one of the largest industries of the French Alps. Thirty-one factories with 72 paper machines employ about 8,000 workers, receive yearly 425,000 tons of raw materials, and produce 120,000 tons of manufactured goods. Nevertheless, located as they are in the very heart of the mountains, the Alpine paper mills seem to be none too favorably situated, either for the transportation of raw materials or for the export of their product. Their dependence upon water power explains this apparent paradox.

1. *The Raw Materials and Their Transportation.* The raw materials used for paper manufacture are generally heavy products, that is to say, they have great weight for little value; thus their transportation is expensive. Moreover, they are in the main produced far from the Alps.

Coal is the most important. In the paper mill, coal is used for two purposes: to produce steam as motive power for the engines of the factories, and steam destined to dry the pulp being made into paper. The quantities of coal required are frequently enormous, especially in the manufacture of the finest types of paper, such as cigarette paper, where sometimes it is necessary to use three kilograms of coal to produce one kilogram of paper. Thus the paper mills of the French Alps need yearly several hundred thousand tons of coal.

Pulp is next in importance as a raw material. This pulp is produced in the forest regions of Europe, in the Scandinavian countries (Norway and especially Sweden and Finland); central Germany, Austria, Bohemia, and Switzerland; in short, in regions located at a great distance from the French Alps.

Pulp used in the paper mills represents more than 100,000 tons; rags used represent much less, perhaps 20,000 tons. These rags are very expensive, because America demands great quantities of them, and they sell at high prices, probably at from twice to four times as much as pulp. Being relatively light, they do not present a difficult problem of transportation. Finally, the industry uses waste paper to an amount of about 25,000 tons, coming especially from Paris and the other large cities of France.

The various chemical products used by the industry can easily be found in the close vicinity in the electro-chemical plants of the Alps.

In short, in addition to the chemical products, the Alpine paper mills use about 400,000 tons of raw materials annually, which must be brought from distant countries. The transportation of these raw materials is expensive, because transportation in the mountains is always high-cost transportation. This region is far from the seaports except Marseilles; but Marseilles communicates with difficulty with the northern French Alps, because the traffic through the Rhone valley is very dense. The Alpine rivers are not navigable, and even the Rhone is little used. Especially since the war, inland navigation has fallen into decay because the rates for water transportation increased greatly, while the railroad companies, under government influences, increased their rates much less, thereby destroying the differential which had favored water transportation.

All the raw materials destined for the Alpine paper mills are therefore brought by railroads. Almost all the available coal is sent from points 125 to 250 miles distant. Part of the wood utilized has to travel from 180 to 280 miles. The rags must be brought sometimes from 500 to 600 miles. Lastly, the foreign pulp crosses the whole of France to reach the Alpine paper mills. Rouen, on the Seine, is almost the sole seaport used for pulp importation. This preponderance is explained by return cargo opportunities in Rouen, or at least in the nearby English ports. But the distance from Rouen to Grenoble is about 470 miles by railroad. Thus the transportation costs are very high. The price of the Scandinavian pulp is increased by about 60% when it arrives in the Alpine factories. Lastly, some plants, installed in deep and narrow valleys, in order to utilize water, are not located along railroads, and must use trucks and wagons in order to connect with the stations; in this way, a cost of $1 a ton is added to the other transportation costs.

It appears, therefore, that the Alpine paper mills are badly located as far as their supply of raw materials is concerned. The same situation exists with respect to the transportation of manufactured goods.

2. *The Market for the Finished Goods.* The manufactured goods are marketed both in foreign countries and in France. The finest kinds of paper (superfine) are especially manufactured for export trade: these include cigarette paper, largely sold in the United States, Algeria, and the Near East; photographic paper destined for England; fine letter papers, sent throughout the entire world; the finest printing paper, sent to nearby foreign countries and to South America; and paper for banknotes, manufactured in Rives, also with worldwide distribution.

The papers of so-called "fine quality" are exported much less, except parchment paper sold in Australia, Holland, and England (for butter); generally exports amount to from 5% to 20% of production. But for these qualities of paper, Paris is the great market, especially for the letter paper, printing paper, and typewriter paper; in this way Paris receives from 50% to 85% of the manufactured goods. The "half-fine" qualities, which are especially destined for newspapers, are sold in the southeastern region of France, from Dijon and Besançon to the Mediterranean shore. But these goods are manufactured less and less in the Alps.

Thus the Alpine paper mills produce

several kinds of paper sent to great distances. All are carried by railroads at very high prices. For instance, from the region of Grenoble to Paris, the cost of transportation varies according to the kinds of paper from 200 to 250 francs a ton, that is to say, from $8 to $10. Transportation costs on cigarette paper, which needs a special package, are about 300 francs a ton to Paris; fortunately, it is a case here of expensive goods, costing about $200 to $1,000 a ton, that is to say, light goods for which the transportation costs are relatively low.

It therefore appears that the location of the Alpine paper mills is unsatisfactory, since they are far from the regions supplying raw materials and from the selling markets, and that the use of cheap water power reestablishes the equilibrium.

3. *The Influence of Water Power.* The use of large quantities of electric power gives other advantages than making the purchase and transportation of coal unnecessary. It permits the manufacture on the spot of wood pulp for the paper mills, thus procuring two kinds of advantages. First, the factories manufacturing this pulp become free to buy, in foreign countries, goods whose prices are greatly increased by the unfavorable exchange. Second, they avoid in this way expensive transportation, for they can find on the spot or in the vicinity the raw materials used for the pulp fabrication, that is to say, wood. The Northern French Alps, especially in Savoy, are well forested and furnish almost all the spruce and fir utilized for the mechanical pulp; only birch and aspen must be sent from the Jura and Burgundy. But this transportation is much less expensive than that of the Scandinavian pulp, and the prices of the wood are less high than that of the foreign pulp. Thus the factories having the use of great quantities of cheap water power can avoid buying much coal and much pulp, which are the principal and most expensive raw materials of the paper industry.

Thus it can be understood why the manufacture of paper has been widely developed for the last 60 years in the Alps. We have here another example of the influence of water power on industries, enabling companies to create large factories in the very heart of the mountains.

IV. Some Other Industries Influenced by Water Power in the French Alps

In may be said that all the industries in the French Alps depend, more or less, upon water power. This is the case even with glove manufacture, one of the great specialties of Grenoble and the surrounding country. In this case, the problem of transportation is without importance for the raw material, which is skins, as well as for the manufactured goods, which are light but of great value. Here, the great necessity is to obtain very skilled and abundant labor, for machinery plays only a secondary rôle. Nevertheless, electric water power can put in motion sewing machines and many other machines needed in the trade.

But much more characteristic is the influence of water power industries upon three important types of manufacture in southeastern France: lime and cement manufacture, iron and steel manufacture, and silk weaving.

1. *Lime and Cement.* The localization of the manufacture of lime and cement is determined entirely by the means of transportation. The raw materials, limestone, and clay, are almost

without value. The manufactured goods are very cheap because manufacture is quite simple; in France the prices of the sacks are almost always more than those of the lime or cement they contain. Therefore, the transportation rates must be very low, since these goods are, par excellence, heavy goods. It is therefore clear that this type of industry is badly located in the mountains. To be sure, the Alps, and especially the outer chains, the so-called Prealps, possess many strata of various limestones, pure limestone and clayey limestone, affording possibilities of manufactures, such as hydraulic lime and many varieties of cement. They can also supply a part of the coal needed in the industry. But the manufactured goods must be transported to great distances, and this condition keeps the Alpine factories at a disadvantage.

But again electric water power intervenes, giving to the Alpine cement and lime industry two offsetting advantages. The use of cheap water power allows the introduction of labor saving devices in the factories. For instance, a new factory in the mountains near Nice, using electric water power, employs only 70 workers for a yearly production of 80,000 tons, while an old factory near Marseilles, using only steam power, employs 250 workers for the same production.

The water power industry in the Alps, moreover, developed into one of the best customers of the lime and cement industry. More and more lime and cement are needed for the building of dams and plants, for the lining of subterranean canals, and for the pipes descending to the turbines. The Chambon dam in the Romanche Valley, which is merely one of the projects now under construction, which will be of the "gravity" type, will absorb enormous quantities of the best artificial cement. It is largely because of this constantly increasing market that the cement and lime industry of the Alps can be prosperous in spite of its otherwise unfavorable location in the mountains.

2. *Iron and Steel Manufacture.* A similar condition exists in the iron and steel industry of the French Alps, which comprises the various plants producing cast iron and steel, as well as a large variety of articles manufactured of iron. This industry is also unfavorably located in the interior of the Alps. Iron ore and pig iron must be transported from Lorraine and the north; coal of the right quality comes from the Loire basin, coke from northern France and even from the Ruhr region. Thus the raw materials become expensive because of transportation charges. The old Alpine metallurgical industry disappeared almost entirely during the nineteenth century because of the impossibility of adapting itself to modern industrial conditions. Water power saved it, or, more exactly, revived it.

Again, the fact that water power industries need the final products of this industry enters in as a factor in its favor. This demand includes articles required in harnessing the waterfalls; screens at the beginning of the canals, flood gates to open or close the pipes, and especially the pipes themselves; those of the Drac-Romanche plant are 19 feet in diameter. But of equal importance is the equipment of the plant itself, the turbines, alternators, and dynamos, and the line equipment, such as poles, wires, and transformers. With this market near at hand, the iron and steel industry has developed until now it is able to compete with more favorably located industries in the markets of France and of the world. The metallurgic plants of Grenoble not only sell to the Alpine

power plants, but also have extended their market to the Pyrenees, to the Central Massif, and to Spain, Algeria, and Morocco. Moreover, assisted by the inexpensive and abundant power, the industry has enlarged its line of products; today it makes farming tools, boilers, heating furnaces, stoves, and small machinery. Thanks to this development, the industry has grown to be one of the most important of the French Alps.

3. *Silk Weaving.* In silk weaving, the influence of cheap power is even more direct. Silk weaving was for a long time an urban industry concentrated in Lyons. After the beginning of the nineteenth century, and especially after the great strikes and riots of 1830 and 1840, this industry began to install itself little by little in the country around Lyons and at some distance from the city, about 100 to 150 miles. The largest extension was toward the southeast, into the rich countries of the Lower Dauphine, which were densely populated. It is interesting that in the silk region called the Lyons region, which contains Lyons and the surrounding country, nearly one-half the silk weaving is located in this southeastern country outside Lyons. A small city such as Voiron, with only 12,000 inhabitants, possesses three more silk looms than Lyons itself.

This industry was originally a home industry. Each worker wove at home on a hand loom and sent the manufactured goods to the Lyons business men. The modern tendency was to create larger and larger factories of up to 500 or 600 looms. Difficulties had already arisen from lack of labor, for it was impossible to find in one village a sufficient number of girls and women suitable for work in the silk factory. In order to overcome this difficulty, the large factories built dormitories where female labor from the surrounding country could live six days a week; large wagons or automobile busses took the girls and women to their own homes in the country every week-end, and brought them back every Monday.

But the World War transformed all these conditions. The lack of men compelled the women to devote themselves to agricultural work and to abandon the factories. Moreover, the progress of agriculture since the end of the war and the prosperity of the peasants during the last 15 years had made the women more exacting. They were no longer willing to live in dormitories or to be carried in uncomfortable wagons. In consequence, the great factories no longer found sufficient labor. It became necessary to break up the large mills and to install small factories where available labor existed, proportioned to the supply of labor. The new type of silk weaving mills is a small factory containing only from 10 to 25 looms and employing only women of the close vicinity. The eight-hour day allows these women to continue to take care of their homes, and if necessary to work in the fields. The tendency is growing to install some looms in the homes, two or three looms in a single house, on which peasant men or women may work when their agricultural work permits it.

For these home looms, as well as for the small factories, electric power is essential; other forms of power are impracticable. Power must be available at all times, for home looms must be ready for use at any time by day or by night. Electric power is more suitable than anything else for this purpose. The distribution net which connects the principal power plants makes it possible today to obtain the necessary power. We see, therefore, a curious retrogres-

sion in the localization of the silk industry—the concentration in large factories at the end of the nineteenth century replaced by a dispersion of the looms in numerous and small plants, in order to be located in the closest vicinity of the available labor; and in some instances, the reappearance of home industry, although with mechanical looms. Not only did this transformation, caused by water power, save the silk weaving industry, but it even permitted a large development; from 1920 to 1927, the number of looms used increased by 20%.

Thus the hydroelectric industry is today an essential element in the economic life of the French Alps. "White coal" permitted the French Alps, at the time when the difficulties of transportation in the mountains threatened to reduce activity, to keep its industries alive and to place them on a sound competitive basis. One might say that "white coal" is the soul of this part of France.

THE UNKNOWN QUANTITY IN MARKETING

By A. T. POFFENBERGER

I

IN THE attempt to solve the equation of business success, the human factor is consistently presented as the unknown quantity which balks its solution. The statement is frequently made that the public taste is fickle and that no one can predict what a human being will do. In fact, it has been asserted recently that the whole basis of the economic system of profit and loss rests upon this unknowable factor. A few statements chosen from that splendid book by W. T. Foster and W. Catchings entitled *Profits* will serve as an illustration of this point of view.

> Chief among these uncertainties [to which profits and losses are due] are those that are inherent in human nature. For, since the end of business enterprise is consumption, production is regulated by distribution; and distribution in turn is regulated by the flow of money through consumers' markets. But the flow of money is directed and conditioned solely by the daily exercise of freedom of choice on the part of millions of consumers. What will these consumers want? How much will they buy at a given price? When will they buy? Where will they buy? Nobody can answer these questions in advance, partly because nobody can foresee the vagaries of human nature. This uncertainty concerning the ways in which buyers will make use of their freedom of choice is the chief risk of business. It is, therefore, chief among the causes of profit and loss.
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> This uncertainty is due largely to three options enjoyed by the holder of money. He can decide *when* he will buy, *what* he will buy, and *where* he will buy.

In an article in the J. Walter Thompson *News Bulletin* (July, 1926) where, under the title, "Consumers Decide," these and other extracts are quoted, it is said that: "Some risks can neither be insured against, equalized, nor greatly diminished. They persist in spite of all precautions and must be reckoned with in any system of economics based on the profit principle. Chief among these are the risks due to the exercise of the consumer's freedom of choice."

It is interesting to a psychologist to learn that, while the universe is fairly well reduced to law and order, in his own sphere of activity, human behavior, all appears to be chaos. The motions of the earth and sun and other heavenly bodies, even the behavior of comets, can be foreseen and predicted to the fraction of a second. The thunderbolt and the lightning have succumbed to law and are no longer the basis of superstitious dread. What is apparently more fickle than the weather? And yet that can be predicted with a fair degree of accuracy, since its causes have been analyzed. Perhaps of all uncertain things, the "number of our days" is the most uncertain, but the actuary can predict and does predict for populations just how many of any given age will die in any year or fraction of a year, and the prosperity of the insurance companies bears witness to his success.

Is it true that the laws of cause and effect break down in the case of human behavior and that there, and nowhere else, is to be found freedom of choice and unpredictability? I wish to offer the suggestion that in this realm of nature, as everywhere else, there is no effect

without a cause. That many of the causes are unknown will be granted, because the science of experimental psychology is an infant compared to the other natural sciences. But that they are *unknowable* is an untenable view which will blind us to the need for research into human nature. To say that human action is unknowable smacks of the period wherein Jove cast the thunderbolts, when the angry gods sent the pestilences and people prayed for rain.

The concept of freedom of human choice in its older sense of unpredictability has been dropped from the language of psychology many years ago, and the concept of law and order has taken its place. Nothing just happens, in the realm either of acts or ideas. Their causes can be discovered. Even the content of our dreams can be accounted for by the process of analysis. This shift from superstition to law and order is evident in many lines of activity. Modern education is directed at an orderly being who is to be prepared for some specific form of service. Modern criminology no longer treats the criminal as a being endowed with freedom of choice, but as one who is the product of a series of determining influences, and it seeks, therefore, to control and direct these influences. Industry no longer looks upon accidents as unpreventable misfortunes, but seeks and finds their causes in overwork, overstrain, poor lighting, or the like, and proceeds to correct the unsatisfactory conditions. The church, too, has come to rely less upon sudden conversion and more upon the belief that thought and action follow definite laws, that it is the slow bending of the twig that determines its course. As a consequence of this shift of attitude, emphasis is falling upon social clubs, Boy Scout companies, Camp Fire Girl organizations, to mold and determine character. Is it only in business and especially in the distribution of goods that behavior is unknowable? Is the individual really free in his choice of how, what, and where he shall buy?

II

All business is conducted on the assumption that behavior is predictable. Making a business engagement, writing out a bill, signing a check, hiring a stenographer, these and a thousand other acts of daily business life rest upon the expectation of a predictable series of acts. Expectations of this sort have become such an established part of business intercourse that they are in danger of being forgotten. But let something go wrong, let some new factor be added to the causes of expected behavior, as when one greets a stranger in mistake for an old friend, because of some striking resemblance, and the resulting shock will show the strength of the expectation that a simple greeting carries with it.

Law and order, or cause and effect, are, indeed, obvious in the cases just cited. They are in operation, however, just as much in the supposed vagaries and fickle acts of human beings, as for instance, in the sudden shift of taste from one toothpaste to another toothpaste, from one soap to another soap, from one automobile to another automobile, from one cigarette to another cigarette. It is not an accident, in the usual meaning of that term, that the American people have suddenly become afflicted with halitosis, or to express it more appropriately, have become "halitosis conscious." These sudden shifts of interest have resulted from strokes of genius in the control of behavior, which are made possible by a recognition of the reign of law in human action.

Rapidly changing fads and fashions are not conclusive evidence that human nature is an unknowable quantity. On the contrary, they are the best evidence that human nature is a knowable quantity and is a known quantity to the clever few who "cash in" on the change. Not every producer or distributor is taken by surprise—there are some who spring the surprise. Not every business has suffered extinction from the recent changes in woman's appearance. Shorter skirts mean less material in garments, but more and finer shoes and stockings; bobbed hair means fewer hairpins, but more hair cutting and hair curling. "What is one man's meat is another man's poison." And there is poison ahead for those who persist in the view that human behavior is unpredictable and who, consequently, make no effort to gain an insight into the peculiarities of human nature.

It is true, indeed, that human wants are not static, and that they seem to shift more rapidly today than ever before. As Earnest Elmo Calkins says in "Business has Wings":[1]

> The manufacturer, whatever he may make, however basic and stable, however well entrenched in the homes of the country, can no longer settle down and let things take their course. He must now hold himself ready to act and act quickly, interpret the signs, anticipate the new attitude of the public, analyze each new invention or discovery for its effects, immediate or ultimate, on his own business. He must sleep like a fireman, fully dressed, ready to dash out at a moment's notice.

The emphasis here belongs not so much upon the "dash at the moment's notice" as upon the anticipation of the effects of invention and discovery, of social and industrial evolution, and upon the prediction of what the new wants of human beings will be.

[1] *Atlantic Monthly*, March, 1927.

III

The study of human motivation has disclosed a number of fundamental needs or wants. They are not so limited in number and kind as the psychoanalysts would have us believe, but they are as powerful forces in the motivation of behavior as psychoanalytic studies indicate. Among them are the need for food and drink, for rest and comfort, for social intercourse, for the domination over our own kind, and many others, which arise in the interaction among people. Although these needs or wants demand satisfaction, the exact means of satisfying them are not prescribed once for all by nature. It is the main function of advertising to demonstrate the means of satisfying them, that is, to show how a given commercial product will satisfy one or more of these needs. When the need to be satisfied is a powerful one and when the advertiser can show that his product will satisfy the need better than any competing product, its success will be assured. From a recognition of these facts, a transition is occurring in advertising, whereby emphasis shifts from the sale of articles to the sale of "satisfaction," or, as it is more commonly called, "service." The actual commodity that is sold is merely the vehicle by way of which service is rendered or satisfaction is provided. Pelmanism and Listerine sell success in life, the Cadillac Motor Company sells distinction, the Simmons Bed Company and the American Radiator Company sell sociability and hospitality, Pepsodent sells beauty and its consequences, Celotex sells comfort, and Camel cigarettes sell the joy of living. Thus have the knowable and known quantities in human nature contributed to successful marketing for those who know.

The following observations of a keen young woman illustrate the point dramatically:

> Why will men try to argue me into purchasing when it's so easy to flatter me into it? Do you think I want to buy your washing machine because it has the one perfect motor, the one efficient washing principle? That sounds like wheels and bolts and nuts to me and it rather bores me. But when you translate it into my language, I'll listen. When you tell me that by washing more quickly it gives me more time for the leisure I so richly deserve, I'll consider your mechanical improvements. When you say that it will save my youth and beauty—if you say it subtly enough—I'll believe in your fine working principle.
>
> I may have my saner moments, when the sturdiness and economy of your product become the deciding factor, but generally speaking, if you tell me that your stockings will make my ankles slender, rather than that they will wear longer, if you assure me that your rugs are in 97¾ percent of the homes on Park Avenue, if you reveal to me that by serving your baked beans, I save three hours a year for those lighter pursuits which are but my due, that by using your perfume I surround myself with worshipful admirers—if your advertising has wings to lift me into the realm of heart's desire—the chances are that you'll make a sale.[2]

IV

There can be scarcely any doubt of the fact that advertising plays an important part in determining how fundamental wants shall be satisfied. Hotchkiss and Franken in their latest book[3] have shown the close relationship between the dominance of a trade name in the mind of the public and the money spent for advertising, and the relationship between change in dominance over a few years and change in advertising budgets. The relationship would be far closer if there could be a measure of quality to supplement the measure of quantity of advertising. Comparing results obtained from their original study conducted in 1921 with those obtained in 1925, they say: "The 1925 test, while it did indicate that changes occur, also indicated that these changes were comparatively slow and occurred only for good causes. It seems probable that, except where these causes were operative, the leaders in familiarity in 1921 may hold approximately the same position now." Such facts as these show that human thought can be predicted and within limits controlled by the advertiser. If men in the near future take to wearing suspenders and whiskers, do not hastily conclude that human nature is a perverse and unknowable quantity, but look, rather, for the manufacturer of suspenders or the maker of pomades or celluloid combs, or his advertising agent, who is guiding human destiny!

There is some danger that the advertiser does not fully appreciate the widespread and far-reaching effects of the publicity that he creates upon the directing of human desires. These effects are not measurable alone in purchases of goods. Two brief quotations from advertising literature will be suggestive:

> Americans have been educated to consume a wide variety of articles in tremendous quantities. Marketing methods with intensive selling and convincing advertising have done this. . . . . Undoubtedly, the characteristics of the American people have made the tremendous development of consumer markets possible. The democratic spirit of the people, which is evidenced not only politically but in material ambitions, makes everyone desire what his neighbor has. Emulation has been of great aid to the stimulating force of advertising and aggressive sales methods.[4]

Also:

> If the poster appeals especially to one of the

[2] From *Written after Hours* (issued by Erwin, Wasey and Company, Ltd.), February, 1927.

[3] *The Measurement of Advertising Effects*, New York, Harper and Brothers, 1927.

[4] *Harvard Business Review*, October, 1925.

upper classes, if such a term may be used, it would be hard to convince any advertising man that he was not also making converts from the lower ranks. For the state of any man's pocketbook may keep him from getting the object he sees advertised, but it cannot kill his desire for it, and as soon as he does have the money he's very apt to respond to the very fine posters he has seen.[5]

Thus, in a world where all men are made neighbors through a multiplicity of easy and speedy means of communication—the daily newspaper, the magazine, the motion picture, the automobile, and the advertisement—emulation, which is a powerful motivating agent, is aroused as a stimulus to the purchase of goods. But at the same time that it is aroused, it is balked by the state of the pocketbook of the lower ranks. To be made to desire the good things of life in use around us—the automobiles, the clothes, the theaters, the fine restaurants, the fancy dogs, and the like—and to lack the power to purchase them creates dissatisfaction with wages, with living conditions, and probably resentment against the whole social order which makes such an apparently unequal distribution of the world's goods possible. To hold a bone before a hungry dog and then not let him have it may motivate an unexpected and serious form of response. And it should be remembered that when one gets down to fundamental motives, dogs and humans are very much alike.

V

It appears, from what has been said, that in America there are two great educational forces, education proper, such as is represented by the public school system, and advertising. They resemble each other in at least two respects, namely, their widespread influence in determining action, and the money spent upon them. There is probably no family in the United States today that is not influenced by our public schools and by our advertising. As to the total expenditures of the two, no estimates are at hand, but the cost of one full-page advertisement in one of the great national advertising media would cover the budget of many a village school for a year. These two institutions differ strikingly in one respect. Our educational system is built upon the beliefs that human behavior is predictable and controllable and that the native endowment of the child can be unfolded and developed in an orderly fashion. The whole machinery of education is directed toward the building of an American character and culture. Advertising, on the other hand, rests upon the expectation that behavior is an unknown quantity, a risk that must be allowed for but cannot be controlled. With many millions of dollars in our pockets, "we don't know where we're going but we're on our way." One can only guess what a profound change might follow the adoption of the principles of a sound educational psychology as the basis of advertising methods.

VI

The views expressed in the preceding pages may be summed up in a few words. Human behavior is not an unknowable quantity and an uncontrollable quantity in marketing. That it is an unknown quantity to all but the leaders, who are students of human nature as well as advertisers, and even to them in some instances, is doubtless true. For the scientific study of motivation is relatively new, and there is still much to be learned. To entrust the creation and direction of the desires of a hundred

[5] *The Poster*, December, 1925.

million people to those who consider human behavior an unknowable quantity may lead to consequences entirely unforeseen by them. The recognition of the fact that much is already known, the belief that what is unknown may become known, and the direction of our efforts to solving the unknown, should be the attitude toward marketing problems. The outstanding successes in the advertising world bear witness to the healthfulness of this policy.

RENTS AND SALARIES IN NINETY-SIX CITIES

By HENRY E. NILES

ONE OF the problems that frequently faces business men is to determine what is a fair rent for an office or a fair salary for a particular job in a particular city. It is generally known that variations exist from city to city and that in the larger cities the rents and salaries are usually higher than in the smaller cities. But how much higher they are has usually been a matter of guesswork.

For the last two years the Life In-

TABLE I. RENT PER SQUARE FOOT AND MONTHLY SALARIES

As reported by general agencies and branch offices in cities in the United States and Canada. Figures are based upon actual conditions in the Spring or Summer of 1927

STATE AND CITY		RENT PER SQUARE FOOT				SALARIES PER MONTH (Averages)			
		Average	25% Pay Over	25% Pay Under	No. of Agencies	Cashiers	Chief Clerks	Stenographers	Typist or Routine Clerk
UNITED STATES									
United States Average		$2.16			964	$150	$115	$ 98	$ 82
Alabama	Birmingham	2.20	$2.29	$2.01	10	175	147	84	...
	Montgomery	1.56	....	....	5	...	...	...	...
Arkansas	Little Rock	2.03	....	....	7	163	133	...	...
California	Los Angeles	2.54	3.02	2.34	20	171	140	104	95
	San Francisco	2.40	2.74	2.18	21	175	135	110	80
	Oakland	2.73	....	....	6	...	...	...	...
Colorado	Denver	1.66	1.99	1.50	20	137	125	106	85
Connecticut	Hartford	2.42	2.76	2.12	13	147	130	94	81
	New Haven	2.18	....	....	5	...	...	...	...
Delaware	Wilmington	1.87	....	....	5	...	...	...	...
District of Columbia	Washington	2.10	2.22	1.85	14	150	100	...	...
Florida	Jacksonville	2.10	....	....	6	174	...	104	...
Georgia	Atlanta	2.30	2.49	1.81	15	175	115	100	74
Illinois	Chicago	3.55	3.84	2.95	33	202	140	110	104
	Decatur	1.61	1.70	1.29	11	105	...	...	...
	Peoria	1.45	....	....	7	125	...	86	...
	Rockford	1.68	....	....	5	...	...	...	...
Indiana	Indianapolis	2.12	2.46	1.60	10	172	119	100	...
Iowa	Cedar Rapids	1.66	....	....	5	...	...	...	...
	Davenport	1.76	2.14	1.18	11	122	...	83	...
	Des Moines	1.94	2.22	1.87	18	156	118	98	...
	Sioux City	1.77	1.94	1.46	9	102	...	...	...
	Waterloo	1.60	....	....	5	117	...	...	...
Kansas	Topeka	1.88	....	....	6	163	...	...	...
	Wichita	2.05	....	....	5	...	...	...	...
Kentucky	Louisville	2.18	2.31	2.11	14	147	112	90	66
Louisiana	New Orleans	1.80	....	....	5	189	...	...	...
Maine	Portland	1.52	1.68	1.20	12	120	87	78	...
Maryland	Baltimore	2.57	2.73	2.26	20	150	115	82	68
Massachusetts	Boston	3.08	3.39	2.66	22	175	115	90	70
	Springfield	2.18	2.30	1.78	12	126	123	90	...
	Worcester	2.00	2.24	1.90	12	135	101	88	...
Michigan	Detroit	2.77	3.06	2.52	29	183	122	102	86
	Grand Rapids	2.57	2.68	2.43	10	128	...	84	...
Minnesota	Duluth	1.48	....	....	7	...	...	...	...
	Minneapolis	2.14	2.47	1.90	20	143	105	91	77
	St. Paul	2.04	2.10	1.80	18	135	98	90	76
Missouri	Kansas City	2.36	2.78	2.08	23	150	112	97	65
	St. Louis	2.09	2.43	1.83	20	220	110	100	80
Nebraska	Lincoln	1.55	....	....	6	142	...	...	...
	Omaha	2.37	2.59	1.98	19	131	128	90	...
New Hampshire	Manchester	1.96	....	....	6	...	...	...	...
New Jersey	Newark	3.02	3.44	2.75	12	144	115	95	87
New York	Albany	2.45	3.00	1.72	12	150	119	90	...
	Brooklyn	2.53	....	....	5	...	...	...	...
	Buffalo	2.42	3.00	2.07	14	150	117	90	74
	New York City	3.06	3.51	2.53	27	190	138	111	87
	Rochester	2.06	2.26	1.94	14	142	108	90	...
	Syracuse	2.32	2.44	2.18	13	164	117	88	...

surance Sales Research Bureau has supplied its members with figures which make possible a quantitative comparison of rents paid in different cities for space used for the same purpose. No comparison is made between the rents of exactly similar space in different cities because it is impossible to determine what constitutes exactly similar space. However, this difficulty can be avoided by comparing in different cities the rents actually paid by life insurance agencies for space for the same kind of use, and, since the practical problem before the Bureau's members is what to pay for space suitable for a life insurance agency, these figures are really of more value than would be figures of rents for exactly similar space.

Figures of average salaries were also obtained. Since jobs could not be defined accurately and since larger agencies usually pay more for a similar job than small agencies, a table of adjustment was worked out, showing the amount by which average salaries

TABLE I *(Continued)*. RENT PER SQUARE FOOT AND MONTHLY SALARIES
As reported by general agencies and branch offices in cities in the United States and Canada. Figures are based upon actual conditions in the Spring or Summer of 1927.

STATE AND CITY		RENT PER SQUARE FOOT				SALARIES PER MONTH (Averages)			
		Average	25% Pay Over	25% Pay Under	No. of Agencies	Cashiers	Chief Clerks	Stenographers	Typist or Routine Clerk
North Carolina	Charlotte	$1.74	....	....	7	$175	...	...	...
	Raleigh	1.84	$2.38	$1.56	10	150	$105	$100	...
North Dakota	Fargo	1.28	....	....	7	150	...	...	...
Ohio	Cincinnati	2.40	2.59	2.25	18	161	152	100	75
	Cleveland	2.36	2.95	2.20	20	167	116	102	90
	Columbus	2.44	2.72	1.64	16	155	111	100	81
	Toledo	2.26	2.44	2.22	12	147	120	106	...
Oklahoma	Oklahoma City	2.26	2.40	1.68	13	160	128	100	91
Oregon	Portland	1.91	2.11	1.67	19	150	105	95	81
Pennsylvania	Erie	1.90	....	....	6	132	...	...	...
	Harrisburg	2.31	....	....	7	130	...	...	...
	Philadelphia	2.76	3.69	2.29	16	175	118	98	95
	Pittsburgh	3.03	3.51	2.59	21	180	140	92	80
	Reading	1.58	....	....	5	...	...	...	...
	Scranton	2.14	....	....	5	140	...	...	...
Rhode Island	Providence	2.30	2.50	2.00	12	128	111	72	...
South Carolina	Columbia	1.87	....	....	5	118	...	...	...
South Dakota	Sioux Falls	1.30	....	....	7	108	...	...	...
Tennessee	Chattanooga	1.82	....	....	7	147	...	...	...
	Memphis	1.92	2.33	1.60	11	150	125	102	...
	Nashville	2.03	2.34	1.75	14	150	125	101	78
Texas	Dallas	2.40	2.62	2.15	9	160	...	107	...
	Fort Worth	2.02	....	....	5	...	...	...	...
	Houston	2.46	....	....	5	135	...	...	...
	San Antonio	1.71	2.12	1.51	9	165	...	100	...
Utah	Salt Lake City	1.94	2.31	1.20	10	143	...	90	74
Virginia	Richmond	1.39	1.98	1.33	12	135	132	83	...
Washington	Seattle	2.24	2.49	1.90	20	150	110	90	78
	Spokane	1.58	1.84	1.34	10	140	120	78	...
West Virginia	Huntington	1.54	....	....	6	128	...	...	...
Wisconsin	Milwaukee	2.06	2.15	1.90	10	175	145	94	73
CANADA									
Canadian Average		1.64	....	....	144	150	100	80	71
Alberta	Calgary	1.69	1.94	1.53	10	155	99	86	...
	Edmonton	1.68	2.17	1.58	10	132	...	83	...
British Columbia	Vancouver	1.54	1.59	1.47	10	154	110	84	...
Manitoba	Brandon	1.52	....	....	7	125	...	77	...
	Winnipeg	1.85	2.02	1.61	11	164	92	80	71
New Brunswick	St. John	1.18	....	....	7	132	97	...	...
Nova Scotia	Halifax	1.33	....	....	6	184	105	74	...
Ontario	Hamilton	1.42	....	....	7	128	...	66	...
	London	1.04	1.35	.80	9	132	86	77	...
	Ottawa	1.74	....	....	8	142	...	68	...
	Toronto	2.13	2.68	1.74	15	175	117	81	72
	Windsor	2.48	....	....	6	...	...	...	...
Quebec	Montreal	2.28	2.56	2.14	12	200	136	80	66
	Quebec	1.23	....	....	6	116	...	58	...
Saskatchewan	Regina	1.82	1.98	1.54	10	162	90	86	73
	Saskatoon	1.51	1.95	1.31	10	150	95	78	...

should be modified according to the size of the agency.

The average rate of rent per square foot for life insurance agencies in all parts of the United States was found to be $2.16. The highest rentals were those paid in Chicago, Boston, and New York, with averages of $3.55, $3.08, and $3.06 respectively.

The average salary for cashiers in all reporting United States agencies was $150; for chief clerks, $115; for stenographers, $98; and for routine clerks or typists, $82. The considerable departure from these averages from city to city is shown in Table I.

The average figures which are presented in Table I were not considered a standard which ought to be paid in a particular city in all agencies. They were merely presented to show what actually was being paid in the reporting agencies, so that they might serve as a guide in the solution of any particular problem. Special conditions have often justified expenses much above or below the average, but a knowledge of the average in the past year often helped life insurance men in forming intelligent decisions. For this reason the Bureau repeated and expanded its study in 1927 along the lines of a similar study made in 1926.

The data included in this study were procured from over eleven hundred agencies through the cooperation of 54 home offices of life insurance companies. In many cases, the home office had the local managers report their figures directly to the Bureau. Unless at least five reports were received from a city, none of them were used, as the average based on less than five reports would often be misleading. The median was selected as the most satisfactory form of average because the distribution of the rates of rents and salaries was in most cases positively skewed.

Rents

The many factors which affect the rent per square foot for individual agencies are concealed to some extent in the average given. The class of building, its location and general condition, the type of space occupied in the building, the terms of the lease, its date and duration, are some of the factors causing difference in rentals. In 1926, data were obtained from the reporting agencies on all of these subjects, but no satisfactory statistical measure of the importance of any one of these factors could be found.

Although the factors just mentioned are not directly considered in the table, their effect can be judged from the figures following the average. These two figures are the upper and lower quartiles which mark the limits of the rentals paid by the middle 50% of the agencies reporting. Above the high figure are the rents paid by 25% of the agencies, while another 25% pay rents below the low figure. These figures are given only when there were nine or more reports from the city, as conclusions based on fewer reports might be misleading.

Salaries

Salaries were asked for four classes of employees as follows:

1. *Cashier*—One whose time is devoted mainly to collections, accounting, and other office details.
2. *Chief Clerk*—One whose time may be devoted in part to collections, accounting, etc., but who also devotes some time to stenography or other clerical work.
3. *Stenographer*—One whose time is devoted almost entirely to stenography and filing.
4. *Typist or Routine Clerk*—One whose

time is devoted mainly to typing, filing, or other routine work.

The above definitions are not very rigid, but it is not believed that the errors which probably occur in a few cases would have much effect upon the average figures. When several salaries were given for the cashier, it was assumed that all but the highest one were for employees in the cashier's department, and the highest salary was used as that of the cashier. Only average figures are given for salaries, as in most cases the available data would not justify further refinements.

Adjustment of Salaries According to the Size of the Agency

In addition to the variations in salaries from place to place, there is a wide variation in salaries of cashiers and chief clerks in agencies of different sizes. In general, the larger the size of the agency, the more responsible is the work and the higher is the salary paid to the cashier and the chief clerk. However, there is no important difference between large and small agencies in the salaries which they pay to stenographers or to routine clerks and typists.

Table II gives figures which enable one to adjust the averages given for any particular city in Table I. All the reports were divided into two groups according to whether they came from cities of 500,000 or more, or from smaller places. The average salary of cashiers in the first group was found, and then this group was divided into smaller units, depending upon the number of employees in the agency (not counting the selling force of agents or supervisors). Group averages were then obtained which were found to vary somewhat from the general averages shown in the table. For instance, agencies with one employee were found to pay only 59% of the salary paid by the average agency in cities of 500,000 or over, whereas agencies with eleven or more employees paid their cashiers 129% of the average.

TABLE II. GROUP AVERAGES OF SALARIES ACCORDING TO SIZES OF AGENCIES

No. of Employees in Agency	Cities of 500,000 Population or More		Cities under 500,000 Population	
	Cashiers	Chief Clerks	Cashiers	Chief Clerks
1	59%	86%	71%	95%
2	86	72	97	82
3	90	88	104	93
4	100	102	111	95
5-10	109	104	139	123
11 and over	129	128	176	141

By assuming that the percentage variation in salaries due to the size of the agency is approximately the same in each city, adjustments can be made to show average salaries for agencies of a particular size in a particular city. Table II shows what the percentage adjustment should be for agencies of each size. For example, according to Table II, the average salary for a cashier in Boston, a city of over 500,000, is $175 per month. To get an adjusted figure for one-employee agencies, that is, for those with only the cashier, take 59% of $175, which is $103. For agencies with eleven or more employees the adjusted figure is 129% of $175, or $226.

In a similar manner adjustment may be made for cashiers and chief clerks in smaller cities. It will be seen that a chief clerk's salary in a two-employee agency is generally less than if there is only one employee in the agency. This is probably due to the fact that the "chief clerk" of a one-employee agency becomes the "cashier" when a second employee is hired, and the second one is called a "chief clerk."

COMMERCIAL AIR TRANSPORT

By HIRAM L. JOME

THOUGH there may be disagreement as to their practical value, there is no doubt that the recent spectacular series of long distance flights has aroused interest in commercial aviation. In any study of the development of commercial aviation it must be recognized that the airplane must compete with as well as supplement older agencies of transportation. Among forms of transportation it is not alone in being forced to overcome popular antagonism and scientific inertia, but this skepticism on the part of the public is a distinct obstacle to the development of the airplane. The railroad, the steamship, and the automobile were sources of revenue long before they reached their present high state of technical efficiency. Because the public demands safety, airplane perfection appears to be required in advance of public patronage, a fact which requires any individual in the airplane business to assume large risks of loss for the sake of a possible future profit. In many cases it has appeared that the future development of commercial aviation must depend upon public subsidies.

In spite of this handicap, reports from different parts of the world reveal a rapid growth of air transport operations. Almost 10,000,000 miles were flown in 1924—a figure which was exceeded in 1925 by Europe alone. Though complete data for 1926 are not available, the world total seemed to be at least 18,000,000 miles. No reliable world figures are available as to non-scheduled civil and commercial activities, but according to the Department of Commerce figures, the mileage of 585 American air service operators in 1926 was 18,746,640. Although the government figures seem to be rather liberal, it is improbable that the United States is surpassed by any country in this phase of aviation.

In some phases of scheduled operations we appear also to hold the lead, while in others we lag. Table I presents a comparison of scheduled air activities in several European countries and the United States for 1926.

There are between 3,500 and 5,000 civil and commercial planes in the United States today,[1] as compared with perhaps 300 in Germany. According to the Census of Manufactures, 1,186 airplanes and seaplanes valued at $8,871,027, or $7,479 each, were manufactured in 1926, as compared with 587 valued at $7,737,000, or $13,180 each, in 1923. The average value in 1925 was $8,458. These figures reveal a lowering of costs and a tendency toward the making of aircraft for the use of the general public.

I. International Aviation

International aviation presents a number of important and significant characteristics.

1. In the first place, most nations, in addition to their emphasis on internal traffic, regard the airplane as a means of

[1] *Aviation*, November 29, 1926. This is an estimate of the United States Department of Commerce. See also *European Economic and Political Survey*, July 15, 1927.

maintaining and extending their commercial or political influence and control. So Great Britain is encouraging international experimental flights, is constructing a route between Cairo and Cape Town, is maintaining air connections between Cairo and Karachi,[2] and is planning lines to connect London with Hongkong, Malta, India, Egypt, Canada, and Australia.

Eager to maintain her influence in Northern Africa, France has established the Compagnie Général d'Enterprises Aéronautiques, or "Latécoère Lines," which operate the routes from France across the Mediterranean as far as Dakar, and plans to extend them to Buenos Aires[3] through cooperation with a South American subsidiary. She is also maintaining a service with the Balkan countries and Turkey, and her companies hope, in cooperation with the British, to extend their route to Bagdad.

A new meaning is given to the old term "peaceful penetration" through Germany's aviation activities, such as the planned fifty-hour service to Vladivostock, her monopoly in Persia, the numerous projects in South America, and her sixty-odd lines[4] radiating to all parts of Europe and other sections of the world.

Similar developments have taken place in Spain, Italy, Soviet Russia, Belgium, and Holland. By means of the airplane the United States is strengthening her connections with Hawaii, the Philippines, and Central and South America. Americans, like others, are employing the airplane in their exploration of unknown regions, and regard it as a means of national defense. "The proper development of the aeronautical industry is essential to our national defense."[5]

2. *The Subsidy.* In view of the above consideration, practically all nations are resorting to the use of the subsidy. The subsidy, it must be recognized, has been a common factor in the development of the older means of transportation. The American federal and local governments

[2] The Bazra to Karachi service is temporarily suspended.

[3] A broken air-water line.

[4] On account of the relative ease of starting and abandoning, the number of lines varies greatly from season to season. The length of the German airways varied in 1926 from about 8,000 to 20,400 kilometers.

[5] Statement of President Coolidge in a recent budget message. The testimony given before the Select Committee of Inquiry into Operations of the United States Air Forces in 1925 reveals a pronounced emphasis on this phase of commercial aviation in this country. The hearings of this committee are published in six volumes, which will be referred to as "Select Committee."

TABLE I. COMPARISON OF AIR ACTIVITIES IN THREE EUROPEAN COUNTRIES AND THE UNITED STATES, 1926

Country	Miles of Airways*	Plane Miles	Mail‡ (*pounds*)	Goods (*pounds*)	Passengers
United States	9,474†	4,475,000	810,855	1,733,090	5,782
Germany	11,003	3,807,000	664,400	1,413,500	56,268
Great Britain	1,195	865,000	§	§	18,463
France	7,419	3,229,000	1,308,831	2,349,356	18,861

Data from Aeronautics Branch, Bureau of Foreign and Domestic Commerce, Department of Commerce, and from *European Economic and Political Survey*, July 15, 1927.

* This is a fluctuating figure, because of the ready opening and abandonment of lines.

† In this figure the writer counted the Chicago-New York airway twice, as there are, in effect, two airways.

‡ Though these items are approximately comparable, each absolute figure contains some duplication. For instance, 85% of the United States contract air mail was also carried on the government routes.

§ Separate figures not available. The cargo and mail aggregated 757 tons. Great Britain, therefore, comes last of the four countries in total cargo and mail carried.

have given the railroads an amount of land equal to the area of Texas and Pennsylvania, while states and cities guaranteed or assumed the bonds of favored railroads and canals. The governments of continental Europe, realizing that railroads and waterways are of military as well as of commercial value, encouraged their construction, either by undertaking it themselves or by granting subsidies to private companies. These subsidies took the form of donations of property, capital subscriptions, covering of deficits, the guaranteeing of interest, and occasionally of the principal, of bonds, and the payment of dividends on stock. English railroads, on the other hand, were developed without the aid of the subsidy.

The World War left its legacy of depressed business, limited capital, timid investors, self-centered governments, and—the military airplane. The airplane was regarded as a valuable weapon of war. The cessation of hostilities and the need for economy necessitated a retrenchment of the military program, but several countries hit upon the device of developing commercial air transport so as to have a potential military weapon. Since private initiative was not ready to support fully this new and experimental business, governments assumed the lead.

International rivalry often forces a country to grant subsidies. A country faces the alternative of subsidizing aviation or of developing no commercial aviation and seeing its territory crisscrossed by the planes of foreign companies. This dilemma drove Austria to the aid of her domestic air services.

Since the amount and donations of the various subsidies are constantly changing, it is almost useless to enumerate even the main facts regarding the important nations. To illustrate the nature and extent of the subsidy, the important facts for a few countries will be given.[6] The figures, except as otherwise noted, refer to grants by the central governments only, and do not include the numerous types of direct aid given by cities, either in the form of money or in the form of privileges.[7]

France. The air transport companies received in 1926 a total of 60,500,000 francs. On account of the extension of routes, this was increased to 78,650,000 francs for 1927. France spends 169,211,240 francs for civil aviation. The government is planning during 1928 to spend about 195,000,000 francs, of which 91,000,000 is to take the form of premiums and subsidies.

Germany. The central government spent 27,100,000 reichsmarks for commercial aviation in 1926. This total includes 8,370,000 reichsmarks for subsidies and 5,300,000 for scientific research. In addition, subsidies, both direct and indirect, are given by the state and city governments. The total subsidies are estimated at 87,140,000 reichsmarks for 1926. Federal direct subsidies, amounting to an average of 2 marks every plane kilometer, cover about 69% of the operating costs.

Great Britain. The government has agreed to subsidize the Imperial Airways to the amount of 1,000,000 pounds over a period of ten years. The government spends 476,467 pounds annually for civil aviation, including 180,000

[6] Data gathered from official British figures in the Annual Reports of the Air Ministry and from reports transmitted by consular officials to the Department of Commerce and either published in *Commerce Reports* or *Foreign Aeronautical News*, or made available to the author on request.

[7] For instance, of the total subsidy paid to the lines operating out of Frankfort, that city pays 28.7%. *Foreign Aeronautical News*, May 27, 1927. In Germany international lines are usually subsidized by the Reich, internal lines by the states or cities.

pounds for subsidies for both the European and the Egypt-India services. To earn the former subsidy the Imperial Airways planes must fly 425,000,000 horsepower miles. In 1926 the planes covered 549,000,000 horsepower miles. For purposes of calculation, every mile flown by a marine air craft counts as 1½ miles. The annual subsidy payment for the European services is to decrease from year to year, with the idea that at the end of the ten-year period the company will be self-supporting. For the Cairo-Karachi service the subsidy, which is in addition to the 1,000,000 pounds, is a stipulated sum per flight.

The Netherlands. During the first three years of operation of the K.L.M. the Dutch government paid two-thirds of the net operating loss, amounting to a total for the period of 833,000 florins. From 1923 to 1926, loans without interest were granted to the company, these aggregating 1,400,000 florins. A law was recently enacted whereby the government is to provide a subsidy of 2,800,000 florins over a period of seven years beginning July 1, 1927. In 1934 the company hopes to be self-supporting.

The United States. Though the United States is usually cited as a non-subsidizing nation, we have in reality been granting a direct subsidy exceeded only by those of France and Germany. The Federal Government sold Liberty engines at reduced rates. The Post Office Department has developed the air mail at a loss, the difference between the expenditures and the receipts in 1926, for instance, being $1,567,000.[8]

The United States could have adopted either of two policies in regard to the development of the air mail as a basis for the subsequent private commercial aviation:

1. Operate the air mail at a loss.
2. Let private companies carry the mail at a loss or at an excessive rate.

We chose at first the former, most other nations selected the second, and recently we have also adopted the latter method.

In addition to the direct subsidy, the governments of all nations interested in commercial aviation are granting indirect aid. These include meteorological service and weather maps, wireless and telegraph connections, beacons, and other guides to navigation similar to those given to ships at sea. Private enterprise also aids substantially in research and scientific development. For this purpose Germany spends more than five million marks a year. Only two-fifths of Great Britain's and less than one-half of France's civil aviation budget are for operation subsidies. The listed expenses of the United States Air Mail include only a part of the cost of research and commercial and fixed expenses.

The direct subsidy is computed in various ways. In some countries, as in Sweden, Italy, Germany, and Australia, a stipulated sum is paid per kilometer or mile flown; in others, certain definite requirements must be met, such as the attainment of a certain number of horsepower miles, as in Great Britain, or the carrying of a certain amount of mail, as in Germany, Italy, and Argentina; in a few instances the subsidy takes the form of payment of operating expenses or deficits up to a certain maximum, as in Belgium, France, Russia, and originally in Holland; in others, a stipulated amount per flight is granted, as in the case of the Cairo-Karachi service of the Imperial Airways and the proposed Seville-Buenos Aires route; in Holland, the subsidy for a time took the form of a loan without interest to be repaid when

[8] See discussion of costs, p. 213.

commercial aviation is placed on an economic basis. In Colombia and Canada the subsidy, if such it may be styled, consists of the issuance of special air mail postage stamps by or for the benefit of the private companies; in several countries the subsidy involves other direct aid in addition to money payments, such as free fuel (Poland), exemption from certain taxes (Italy), and support of light airplane clubs (United Kingdom and Australia).

3. *The Effects of the Subsidy.* Does the subsidy tend to pauperize the industry? Will it make the people so accustomed to the relatively low rates (in general equal to the railroad fare first class and in some cases less) that they will object to a subsequent increase? Will the private managers become so dependent on public aid that they will continue to appeal to the government for aid, especially in times of financial stress?

There is ample evidence concerning the effects of the subsidy. In France the subsidy includes a purchasing premium, amounting generally to half the cost of the equipment; a route premium in proportion to the distance flown, increasing with the size of the airplanes employed; a payment in accordance with the payload carried; and an extra premium if the company incurs a deficit, which cannot be more than one-third to one-half the route premium, depending on whether the subsidy contract is for one or ten years.[9] According to this principle, the Air Union receives 15.75 francs per kilometer flown with Goliaths, a large machine, and 7 francs for each kilometer flown with Breguets or Spads, smaller machines, and in addition 1.75 francs per kilometer for each 200 kilograms of useful load capacity in flight. The use of large planes is thereby encouraged; eleven out of a total of sixteen biplanes operated by the Air Union in 1925 were Goliaths. The French company operating out of Paris

[9] *Commerce Reports,* December 21, 1925, and Report 336 M, Transportation Division, Bureau of Foreign and Domestic Commerce. Profits are to be divided 40% to the company, 60% to the government.

TABLE II. EUROPEAN AIR SUBSIDIES

Company	Line	Commercial Return* (*percent*)	Cost Price per Ton Kilometer		Receipts per Ton Kilometer Transported (*francs*)	Subsidy per Ton Kilometer Transported (*francs*)
			Available (*francs*)	Transported (*francs*)		
Air Union	Paris-London	69%	15.93	23.11	11.47	19.68
Société Générale de Transports Aériens	Paris-Brussels-Amsterdam	50	17.54	35.22	9.97	29.75
Compagnie International de Navigation Aérienne	Paris-Bucarest-Prague-Warsaw	35	35.83	102.69	10.77	82.71
Compagnie Générale d'Enterprises Aéronautiques	Six lines or routes, France-Northern Africa, as far as Dakar‡	38	31.99	66.38	13.79	50.47
Aeronavale†	Antibes-Ajaccio	62	83.77	134.36	8.86	119.01

* Commercial return = $\frac{\text{Ton kilometers actually transported}}{\text{Ton kilometers available}} \times 100$.

† This was before the merger of the Aeronavale with the Air Union.

‡ The figures given are the simple arithmetic averages of all six lines.

to Holland and Belgium made use of 8 biplanes, all Goliaths.[10] [11]

Is it advisable for an aviation company to employ large and powerful planes? This question would be answered in the affirmative were it not for the fact that the commercial planes of France, as well as of practically every other country, run only at part capacity. A report made in 1926 to the French Parliament in connection with the budget message of the Undersecretary of Aeronautics reveals the startling fact that during the first three-quarters of the year 1925, the French planes were loaded to only about 50% of their capacity.[12] Some of the figures extracted from this report are given in Table II.

It is apparent from this table that some of the companies are more prosperous than others. The commercial return on the Paris-London route was 69%. The lowest record was 35% on the Paris-Eastern European lines. If the separate sections of the Latécoère company are considered, figures for which are averaged by the writer in the table, the lowest return was on the Algiers-Alicante line, on which only 8% of the available capacity was used.[13] The summary profit and loss account for the year 1925 (Table III) shows the dependence of the French aviation companies upon the subsidy. It will be noted that the subsidies are more than half of the gross receipts.

The 1925 income account of the Paris-Eastern European routes shows total credits of 22,052,835 francs. Of this amount, 17,221,692 francs is for subsidies, mostly from France, but some also from Czechoslovakia, Poland, Roumania, Serbia, and Switzerland. Traffic receipts are 871,889 francs, and the loss for the year is 3,812,336 francs.

The traffic experience of French aviation represents the general rule. Aircraft from many nations, including Great Britain, France, Holland, and Belgium, arrive at and depart from the Croyden Airdrome near London. Table IV shows the traffic between Great

[10] Report 207,250 of Transportation Division, Bureau of Foreign and Domestic Commerce.

[11] A subsidy in proportion to the distance flown also has its disadvantages. For one year Great Britain paid a certain sum to Imperial Airways if the annual minimum distance flown was 1,000,000 miles. This system also placed a premium on the use of the small plane. In 1925 the agreement between the government and the company was changed so as to require a "new composite minimum" of 425,000,000 horsepower miles. Thus the use of planes of a large horsepower is encouraged.

[12] Report 40,548, furnished to the writer by the Transportation Division, Bureau of Foreign and Domestic Commerce.

[13] Later returns substantiate this table. According to reports for the entire year 1925, the total available carrying space of French commercial lines was 2,335,526 ton kilometers, of which only 51% was used. During the first half of 1926, "the lines carried 546,635 ton kilometers, as compared with a total available capacity of 1,174,295 ton kilometers—a commercial return of 46%." *Foreign Aeronautical News*, January 28, 1927.

TABLE III. AIR UNION PROFIT AND LOSS ACCOUNT, 1925

Debits		Credits	
Total expenditures	14,937,085.84 frs.	Commercial receipts	5,730,610.98 frs.
Profit for year	285,620.76	Commissions	323,740.31
		Sale of old material	16,605.57
		Miscellaneous and difference by exchange	650,834.01
		Subsidies	8,410,400.00
		Interest and discount	90,515.73
Total	15,222,706.60 frs.	Total	15,222,706.60 frs.

Britain and the Continent for the year ended March 31, 1926.

During the period 1919-1926 the British airplanes engaged in internal and continental traffic achieved the following record:

Flights	22,701
Passengers carried	67,227
Cargo carried (tons)	1,804.7

Since very few of the European passenger planes have a capacity of fewer than five,[14] it is apparent that there is much unused space. Typical figures of the average number of passengers carried per flight for other countries are: Russia 2.3, Canada 1.3, Belgium 3.0, New Zealand 1.8, Hungary 1.4, Austria 1.7, Switzerland 2.1, Poland 2.4, Holland 2.7, Saxony 2.3. In Germany a total of 107,544 seats were available in 1925, of which 55,185 were used. The percentage of used capacity of the Colombian S.C.A.D.T.A., which has a distinct advantage over older means of transportation, ranged from 80 to 90.

Not only do most of the companies operate on only part capacity, but the greater portion of the traffic is handled during the summer months, thus increasing the "peak load" equipment and flying force. The operating statistics published by the K.L.M. (Holland) show that during the year 1925 a total of 1,989 passengers were carried between London and Holland, of which 1,618 were accommodated by the summer service and 371 by the winter service.

TABLE IV. AIRCRAFT FLIGHTS AND PASSENGERS CARRIED BETWEEN GREAT BRITAIN AND THE CONTINENT.*

Year or Month	Flights (Aircraft of all nationalities, including British)	Passengers Carried
April, 1925	469	1,713
May	595	2,083
June	704	2,906
July	671	3,484
August	789	4,369
September	572	2,498
October	364	1,292
November	216	534
December	178	430
January, 1926	223	494
February	255	620
March	367	1,131
Total, year ended March 31, 1926	5,403	21,554
Total, August, 1919 to March, 1926	28,037	86,355

* From *Annual Report on the Progress of Civil Aviation*, year ended March 31, 1926 (British Air Ministry), p. 32.

On the Paris-Holland route the total was 1,052, of which 743 were carried in the summer. The figures of the Imperial Airways testify to the same condition. Furthermore, a large proportion of the passengers are Americans.[15] As a result of this fact, coupled with the unfavorable weather conditions, most of the air transport companies suspend operations during the winter season, though there seems to be a general increase in the number of lines operating an all-year service.

II. The Purpose of Subsidies

Why do nations universally grant subsidies and spend millions of dollars

[14] On April 1, 1926, the Imperial Airways possessed 14 passenger planes with an average seating capacity of almost 13. *Report of British Air Minister*, 1926, p. 7.

[15] Three-fourths of the passengers carried by the Imperial Airway planes during the summer are American tourists. Of the passengers flying from Le Bourget in 1926 to England, Belgium, Holland, Germany, and Scandinavian countries, Americans constituted 42%, English 32%, and French 5%. On the France-Northern Africa lines, covering a territory where tourists do not abound, 83% of the passengers are French, 7% Spanish, and only 4% American and English. As to the increase of traffic in summer, the reader is referred to Table IV, above. During the week ending August 20, 1927, the height of the tourist season, Imperial Airways planes averaged 7.4 passengers and ¼ ton freight. *The Aeroplane*, August 24, 1927. This British magazine gives weekly traffic figures for the most important lines in Europe. Le Bourget figures show a similar summer increase both in flights and in number of passengers per trip.

for the development of commercial air transport, with no apparent commensurate return? Several facts may be cited in answer to this question.

1. Most governments regard the commercial airplane as a potential weapon of war.

2. Governments believe that it is a public duty to educate their citizens to the value and significance of air transportation.

3. The air lines are, in the opinion of many government officials, meeting an important public need. "Studies of the transcontinental airmail indicate that it is utilized by various interests in the following order: banking and financial institutions, export and imports, railways and steamship companies, manufacturers and jobbers, publishing and advertising agencies, the general public."[16] One Chicago bank saves $4,000 monthly by the air mail collection of checks.[17] Imperial Airways carries 6 times as great a value of gold as of general merchandise.[18]

4. The trend of operating costs of air transportation companies is downward. Public officials take the position that private air transport companies ought speedily to become an integral part of a nation's transportation system and therefore should be helped through their difficult development period. The Dutch K.L.M., perhaps the most efficient company in Europe, has decreased its costs by almost 70% from 1922 to 1926. By 1934 this company hopes to be self-supporting. The American air mail contractors are generally optimistic. (For further discussion of costs see pages 213-217.)

5. The fifth reason is the establishment of international routes in Europe, Asia, and South America, and long internal lines in Australia and North America. English internal traffic is insignificant, but the cross Channel services are of great importance. The K.L.M. carries very few passengers and no mail or merchandise between Amsterdam and Rotterdam, but numerous passengers and considerable merchandise between Amsterdam or Rotterdam and London or Paris. The flying time from Amsterdam to Rotterdam is 20 minutes; the train schedule allows about an hour and a half. But it requires 25 minutes for the passenger to go from the business section of Amsterdam to Schipol, its airport, and almost another 20 minutes to journey from Waalhaven, the airport of Rotterdam, to the center of that city.

6. Air navigation is regarded as less trustworthy than land and sea navigation, but it is safer than people ordinarily think. The great mass of airplane accidents occur not in regular scheduled transport, but in stunt and record seeking flights or in flights by non-qualified pilots in unairworthy planes. As far as safety of passengers is concerned, air and railroad transport may be compared in several ways. A comparison on the basis of number of

[16] *Civil Aviation, a Report*, p. 77.

[17] *The Magazine of Business*, September, 1927.

[18] Sir Samuel Instone, one of the directors, said, "The saving in interest was more than sufficient to pay not only for the cost of transport but for insurance as well." Associated Press dispatch, January 9, 1927. Some of the reparation gold has been transported by airplane. The reader will recall that the $147,000,000 check figuring in the recent Dillon-Dodge deal was collected by airplane. The interest at 6% would be more than $24,000 a day.

The following table of insurance rates is taken from Edwards and Tymms, *Commercial Air Transport* (New York: Isaac Pitman and Sons), p. 111:

FREIGHT INSURANCE PREMIUMS PER £100

Route	Surface Transport	Air Transport
London to Paris	6*s* 8*d*	2*s*
London to Amsterdam	6*s* 8*d*	3*s*
London to Cologne	7*s* 6*d*	4*s*
London to Zurich	7*s* 6*d*	5*s*

passengers carried per person killed seems to indicate that an air passenger has from 200 to 500 as many chances of being killed as a rail passenger. A reasonable standard, however, must make allowence for the smaller capacity of the airplane.

On the basis of passenger miles, British planes covered 1,038,960 passenger miles[19] per passenger fatality for the entire period, 1919-1926. If the disastrous year 1924-5 be excluded, this figure is more than doubled. The passenger miles per fatality on American railroads total 41,426,000 in 1890 as compared with 267,791,000 in 1923—one of the "safest" years in the history of our railroads.[20]

Finally, we may consider the number of miles operated for every passenger killed (Table V). There is no question that air transport is at the present time more hazardous to the air passenger[21] than the railroad. But railroads have not always been regarded as a safe form of transportation. The statistics of railroad fatalities cited, comparing 1890 and 1923, show a remarkable progress. Reliable statistics prior to 1889 are not available, but it seems safe to state that the improvement in safety was even greater from 1830 to 1888. The statistics cited for British and American aviation show a general trend towards greater safety.

Figures for other countries reveal a

[19] Computed by the following method:

$$\frac{\text{Miles flown}}{\text{Number killed}} \times \text{Average number of passengers per flight} \quad \text{or} \quad \frac{4{,}563{,}000}{13} \times 2.96$$

From data found in reports of the British Air Ministry.

[20] From *Statistics of Railways in United States.* Accident statistics of the British Civil Air Transport show a steady increase in the number of machine miles per accident, 1919-1926. The conclusion is based on figures computed from the *Annual Report on the Progress of Civil Aviation,* 1925-1926, issued by the British Director of Civil Aviation.

[21] Figures for fatalities only are given in the tables. Railroad passengers are injured from 25 to 30 times as frequently as they are killed, while in air transport the passenger has about an equal chance of being killed or of being injured. This advantage of railroads tends to disappear in case of accidents. Though statistics as to injuries and death of the crew are readily available, they are not considered in this article on account of lack of space. In British transport flying from May, 1919, to March, 1926, 9 of the crew have been killed and 5 injured. On the American railroads in the year 1923, for which other figures are given in the text, this being the safest year in history, 2,026 employees were killed and 152,678 injured; 6,463 passengers were injured.

TABLE V. COMPARISON OF AIRPLANES AND RAILROADS AS TO SAFETY

Type of Transportation	Miles Operated	Passengers Killed	No. of Miles Operated per Passenger Killed
European air routes, 1924 *a*	5,927,356	12	493,946
British air routes, May, 1919, to March, 1926 *b*	4,563,000	13	351,000
British air routes, May, 1919 to March, 1926, excluding April, 1924, to March, 1925 *c*	3,673,000	6	612,166
U. S. Government air mail, 1918 to June, 1927 *d*	15,657,530	43*g*	364,129
U. S. Government air mail, 1918 to June, 1922 *d*	4,362,698	30*g*	145,423
U. S. Government air mail, July, 1922 to June, 1927 *d*	10,294,832	13*g*	791,910
U. S. army model airway, 1923-1926 *e*	1,201,370	1	1,201,370
U. S. railroads, 1890, fiscal year *f*	285,575,804	286	998,516
U. S. railroads, 1923, calendar year *f*	573,938,043	143	4,013,552

a Civil Aviation, a Report, p. 66.
b Annual Reports on the Progress of Civil Aviation, British Air Ministry.
c The excluded year was an unusual one in that 7 passengers lost their lives in one crash.
d Reports of Postmaster General. Figures include ferry and test flights.
e Figures of Aeronautics Branch, Department of Commerce.
f Statistics of Railways in the United States and *Statistical Abstracts of the United States.*
g Crew and passengers.

similar tendency. The number of lives lost on regularly scheduled flights of French planes fell from 14 in 528,163 miles of flying in 1920 to 6 in 2,266,649 miles in 1924. It has been stated that "a passenger in a German transport plane will fly safely to his destination in 99.997% of his journeys.[22] Up to the end of 1926, the United States Air Mail had hauled 9,000,000 pounds of mail, of which only 2,386 pounds were lost. This is a record superior to that of the entire registered mail service. The air bandit has not yet appeared. The *Scadta* in Colombia has not lost a letter, nor has a passenger been killed or seriously injured in 5 years of operation.[23]

Figures as to performance percentages (on-time records) are generally unreliable. Very often an "on-time" flight means only a completed trip. Numerous foreign companies as well as the air mail contractors report performance percentages generally ranging from 90 to 99. The British Air Minister states that the Imperial Airways in 1925-6 completed 93% of their trips "uninterrupted," as compared with 94% in the preceding year.

Chart 1[24] depicts the relative reliability of air and rail transportation in the United States.

III. Factors Influencing the Establishment and Operation of Air Lines

The factors affecting the earning power of air lines may be classified as economic, political, geological, and meteorological. In general, it may be said that until the costs are reduced to the level of the other agencies of transportation, air transport will flourish only where it has some peculiar advantage.

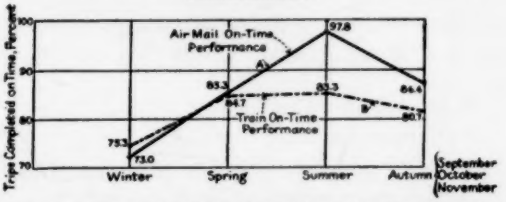
One of the few financially successful companies is that popularly known as the *Scadta,* a German-controlled corporation operating in Colombia. The most important route is the one from Barranquilla on the Caribbean to Girardot near Bogota. The air mail carried by this company increased from 110 pounds in 1920 to 234,000 pounds in 1925, and the number of passengers increased from 12 to 1,124, while the mileage flown rose from 2,700 to 183,000. The reason for the success of these lines lies in their advantage over the previously existing means of transportation. Though the fares by airplane appear to be high, they are relatively low when it is considered that the passengers save at least 10 days of hot, tiresome steamer travel. As stated by a writer who wearied of the steamer trip and transferred to seaplane: "It is

[22] *Current History,* April, 1927.

[23] *Civil Aviation, a Report,* p. 67.

[24] *Journal of the Society of Automotive Engineers,* November, 1925, p. 435. In this article a comparison is also made between the Air Mail and the "crack" New York Central and Pennsylvania trains. The three limited trains of the Pennsylvania between New York and Chicago in May, 1923, made 190 trips, of which 169, or 89%, were on time. The five fastest trains of the New York Central during the first week in June, 1923, made 70 trips between Chicago and New York, of which 84.3% were on time.

CHART I. RELATIVE RELIABILITY OF AIR AND RAIL TRANSPORTATION



A. Per cent of scheduled air mail trips between New York City and Chicago—arriving on time during two years' operations, June, 1921 to May, 1923, inclusive, on an eleven-hour flight-time schedule (minimum ground speed, 70 m.p.h.).

B. Per cent of scheduled trains in New York State arriving on time at division terminals during 1910-1920, inclusive.

Annual air-mail on-time performance at 70 m.p.h., per cent 85.8

Annual train on-time performance at approximately 30 to 35 m.p.h., per cent 81.0

Based on a ground-speed schedule of 70 m.p.h., the mail planes show on-time averages ranging from 73 per cent in winter to 97.8 per cent in summer during a two-year period. Passenger trains operating on a schedule half as fast show averages ranging from 75.3 to 85.3 per cent.

hard to believe that ten minutes of travel by plane saved me nine days of discomfort on the river."[25] The planes are occupied 80% to 90% capacity, the amount of business varying with the time of year and the condition of river travel.

Other startling illustrations of the same kind may be given. The air time from Boma to Elisabethville in the Belgian Congo is two days compared with 50 days by the older methods.[26] The overland trip by rail, canoe, and mule, from Lima to Iquitos requires from 20 to 30 days, while a combination of air and rail consumes less than three days.[27]

But these examples are extremely favorable to aviation. The map shown on page 208 compares flying and rail times in the United States. Statistics cited by a German authority show that on seven German lines the *Flugzeit* is on the average only one-third as great as the *Fahrzeit*. The slightest advantage is on the Berlin-Karlsruhe, the greatest on the Hamburg-Copenhagen route.[28] The Swedish Aerotransport announces in its *Reiseberetning* that a trip by train from Malmö to Hamburg required 13 hours, by air 2½ hours, that a boat trip from Stockholm to Helsingfors takes 22 hours compared with a flying time of 3 hours. When it is considered that the European rates are as a rule very little, if any, greater than those by rail or water, it will be seen that, on account of the saving in time, meals, and sleeper service, the fares by air are relatively lower. Department of Commerce figures show, for instance, that including the cost of the sleeper in the comparison, the rate from Strasbourg to Warsaw is $40 by plane and $50 by train.[29]

The saving in time by airplane is not always real. Where large cities are close together or the railroad time is so fast as to permit a passenger to travel from one important point to another over night, the economy is often a negligible or even a minus quantity, unless the cities are so short a distance apart as to enable a round trip the same day by air.[30] Thus the air transport will not make much headway in the carrying of passengers, mail, or even valuable express between cities from 400 to 600 miles apart, especially where the rail service is good and direct. The trip between New York and Chicago falls above the upper limit of this group.[31]

The Joint Committee of Civil Aviation of the United States Department of Commerce and the American Engineering Council[32] summarize the following conditions which enable a saving of time by airplane:

1. "Land and water routes which require more than a night's run by rail."
2. "Short daytime hops between

[25] *Aviation*, April 19, 1926.

[26] *Commerce Reports*, February 28, 1927.

[27] *Foreign Aeronautical News*, November 4, 1926.

[28] Karl Ruhl, "Verkehrsgeographie und Technik des modernen Luftverkehrs in ihrer Wechselwirkung," *Zeitschrift für Verkehrswissenschaft*, 2 Heft, 1927, pp. 65-82.

[29] *Commerce Reports*, July 19, 1926.

[30] The Imperial Airways has introduced a one-day shopping trip from London to Paris.

[31] Shorter distances are traversed with success. Some of the contract air mail routes in the United States are shorter than this, but they are successful only as feeders. Of the airmail routes contracted or operated exclusive of the main stem, 13 are less than 500 miles, 3 between 500 and 750, and 2 above 750. In Europe many short routes are "successful" only because of bad railroad service, international political barriers, or necessary detours or changes involved in the older means of transportation caused by geographical and geological conditions. A separate New York-Chicago mail service had to be established in accordance with the above principle, leaving New York and Chicago at 9:30 and 7:30 p. m., respectively, and arriving at the destinations the next morning in time for early delivery.

[32] *Civil Aviation, a Report*, p. 71.

large centers which make possible a return trip within a working day."

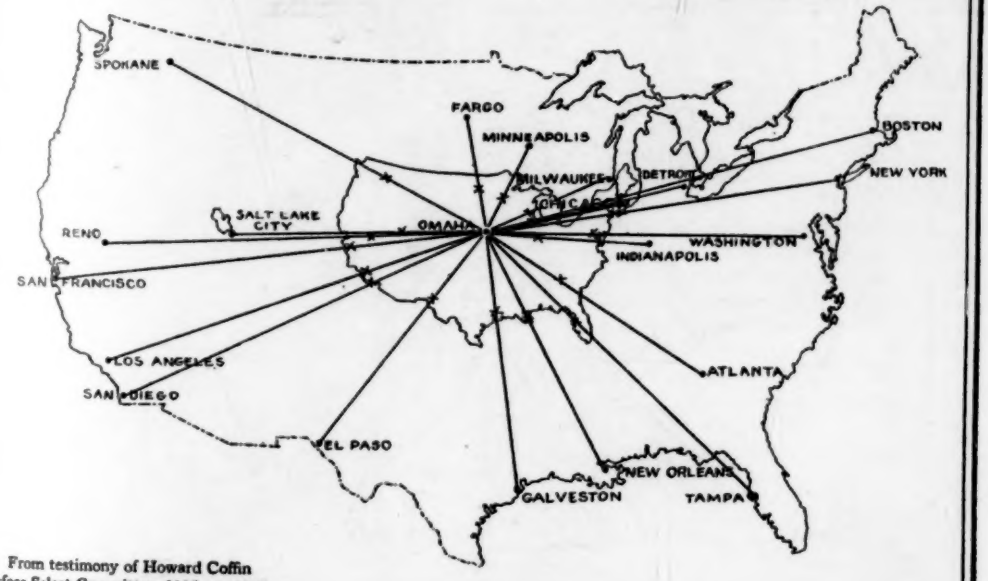
3. "Interrupted traffic, as from Paris to London, which involves a rail journey, a steamer passage, and a second rail journey." The trip from London to Marseilles, for instance, requires 21 hours by rail and water, and only 9 hours by air.

4. "Where bodies of water or other conditions make a wide detour of surface transportation." It is no accident that the first extensive commercial passenger air line in the United States operated between Key West and Havana, Miami and Nassau, Detroit and Cleveland. In 4½ years this company carried 30,000 passengers. Imperial Airways is planning a service between Southampton and Cherbourg, to run in connection with the sailing or arrival of transatlantic steamers. The two old foreign mail routes, New Orleans-Pilottown and Seattle-Victoria, are saving almost a day in the handling of foreign air mail. The early experience of the Key West–Havana line is reassuring. Perhaps one factor which will deter American progress in commercial aviation is the absence of water gaps.

IV. Tendency Toward Combination and Monopoly

Air transport is recognized as filling the rôle of a common carrier. This status reveals itself not only in the fact of public regulation and support but also in the continued trend toward combination and monopoly. France, for instance, in 1920 had 12 aviation companies, in 1926 five, and now only four,

MAPS SHOWING HOW THE UNITED STATES MAY BE CONTRACTED BY THE WIDESPREAD USE OF COMMERCIAL AVIATION



From testimony of Howard Coffin before Select Committee, 1925, p. 1240

These maps are based on rail time and on air records in 1922. It is probable that the lower speed of commercial craft, the frequent stops, and the distance from the landing field to the center of the city will cause the air map to be somewhat enlarged.

Aeronavale, operating southeastward to Ajaccio, being recently merged with the Air Union.

Great Britain at first had four subsidized companies doing business with the continent. Realizing, however, the waste involved in granting money to four competitors when there was hardly enough traffic for one, the government urged their consolidation. This took place in March, 1924. The new company, named Imperial Airways, was given a ten-year monopoly of all British transport aviation with the continent.

The earliest German routes were opened in 1919 by the Deutsche Luft Reederei, the first company in Europe to receive a subsidy. Subsequently numerous other concerns were organized. Because of the severity of competition, the insufficiency of traffic, the international political situation, and the desire to prevent wasting its subsidies, the government sponsored the consolidation process, and by 1924 only two dominant groups remained—the Deutscher Aero Lloyd A.G., and the Junkers Luftverkehr A.G. Duplications in service, however, still existed.

The former, being engaged only in

air transport, purchased its equipment from any German manufacturer except the Junkers Airplane Works. The Junkers company, organized out of the operating branch of the airplane works, was interested in both the transportation and manufacturing phases of aviation. In 1925 the Junkers interests in turn formed the nucleus of the Europa Union, a sort of "repair and supplies" pool. All the associated organizations secured their planes and supplies from the Junkers company, which agreed to "repair the machines and replace any damaged."[33]

The Minister of Transport eventually forced these two groups to form a merger (1925-1926), the Deutsche Luft Hansa A.G., 55% of the stock of which is owned by private interests and 45% by the central or state governments. Though the central organization has complete charge over matters of operation, there are a number of "regional air traffic companies" whose main function is the procuring of traffic and the maintenance of good will on the part of the various states."[34]

Great Britain, France, and Germany furnish the outstanding illustrations of the movement toward combination. Other countries have only one operating company, or where more than one corporation is in existence, each organization has been assigned a definite geographical area.[35] This latter method is followed in the United States, where the Post Office Department is giving monopoly privileges on definite routes to private air mail companies, in this way establishing a nucleus for a future transport system.

V. Conclusion

Both the transport and industrial as well as the manufacturing phases of commercial aviation, it will be noted, are assuming significant proportions in the United States. What of the future? Any answer to this question must be speculative, but it seems to the writer that the following are the factors and conditions which favor the extensive development of transport aviation in the United States.[36]

1. The absence of customs and political barriers over a wide area, thus permitting the operation of long routes with feeders.
2. The recent enactment of a Federal Air Regulation law, which, in the absence of unexpected difficulties of a constitutional or political nature, will supplant the former legal chaos caused either by the lack of law or inconsistent state legislation.
3. Our relatively favorable meteorological conditions.
4. Our numerous large cities which are an "airplane distance" apart.
5. The high standard of living of the American people and their emphasis on speed.[37]

[33] *Annual Report of the British Air Ministry*, 1925, p. 50, cmd. 2489. An account of German business organization is also given in *Aviation* for February 15, 1926, and July 18, 1927, and in a speech of Managing Director Wronsky before the Royal Aeronautical Society, London, on March 24, 1927.

[34] The regional companies owe "their existence to the general construction of the German Reich" (statement of Herr Wronsky). They may in some respects be compared with the regional subsidiaries of our larger holding companies, as organized to maintain political good will.

[35] The countries in which there is only one transport company include Albania, Austria, Bolivia, Brazil, Colombia, Denmark, Finland, Great Britain, Germany, Holland, Persia, Roumania, Sweden; more than one—Australia, Canada, France, Italy, Japan, Poland, Russia, Switzerland, United States.

[36] Throughout this article we are considering *scheduled* operations involving the carrying of passengers, mail, freight, and express.

[37] Comparison of the United States and large European countries as to railroad freight and mail per capita:

Country	Metric tons freight (per capita)	Pieces of Mail (per capita)
United States	18.5	214
Germany	5.9	87
France	7.1	136
Great Britain (exclusive of Irish Free State)	7.5	128

Source: *Statistical Abstract of the United States*, p. 812.

6. The relative freedom of commercial aviation from military influence.[38]

The circumstances unfavorable to the development of extensive air transportation are:

1. The high quality and great quantity of our surface transportation facilities.
2. The relative absence of "water gaps" and inaccessible regions.
3. The lack of landing fields and other flying facilities.
4. The adverse publicity given to aeronautics through accidents resulting from stunt flying.
5. The lack of a scientific basis for the fixing of air insurance rates.
6. The great cost of air service.

[38] "Industry expects mistakes, the Army doesn't." (Testimony of Mr. Howard E. Coffin before Select Committee p. 1,273.) One reason for the inefficiency of French commercial aviation is undoubtedly the military influence. The Allies appear to have conferred a favor on German air transport by prohibiting military air activities. Commercial and military airplanes must obviously differ as to emphasis on cost, maneuvering ability, load, speed, and safety.

Time only will reveal the relative strength of these favorable and unfavorable factors.

The most favorable factor is perhaps the experience of the air mail. This service was the pioneer in night flying and has been an important force in educating the people as to the existence, safety, and reliability of scheduled air transport. The private contractors, who now have also taken over the last of the United States mail routes, are beginning to carry passengers and express in addition to their regular postal cargo, thus serving as the nucleus of our commercial air transport system. The United States Air Mail has appropriately been called "the father of American commercial aviation."

The unfavorable factors are all reducible to the problem of cost, which may be discussed under the following heads:

1. What are the costs of airplane operation?
2. What should be the costs for economical operation?
3. How may this desideratum be attained?

1. During the calendar year 1926, the Transcontinental Air Mail spent $2,631,477,[39] of which $739,551 represented capital expenditures. The mileage, including ferry and test flights, was 2,583,056. The operating costs per mile were thus 73 cents. Of the operating costs 53.3% went for maintenance of way, 12.1% for maintenance of equipment, 28.6% for transportation expenses, and 6.0% for executive overhead.

The United States Air Mail figures exclude certain important items which will need to be considered, especially since the air mail is now entirely in private hands. An extra allowance of at least $588,000 should be made for depreciation, $61,000 for taxes, $350,000 for insurance, $300,000 for traffic, commercial, and research, and $267,000 for interest on investment.[40] The costs would then total $3,458,000, or $1.33 per mile, or about 20 cents per letter. These figures make no allowance for capital investments, which as mentioned above, were $739,551 in 1926.

On the other side of the picture should be mentioned the fact that the United States spent $839,926, or about 32 cents per mile, on fields and lights—an expense the brunt of which under the contract mail system will be borne by the cities or the Federal Government. The private contractors are entering the field with much of the experimental expense prepaid and with many of their capital items already furnished. Similarly, the Army, the Navy, and the Bureau of Standards will continue their work, which will indirectly benefit the contract air mail companies, as well as others engaged in air transport.

The calculated figures of $1.33 per plane mile for the United States Air Mail is equal to about 50% and 18% of the total cost per mile for the passenger and freight services respectively of the class I steam railroads (1924).[41] Since the trains carry an average of 63 passengers and 647 tons, a capacity which airplanes may never reach,[42] it is obvious that the costs of commercial operation must be substantially reduced, or else the airplanes must confine them-

[39] From figures of the Postmaster General cited in the *Aircraft Yearbook*, 1927, pp. 313-316.

[40] These estimates have been made on the basis of experience of both American and European companies:

Depreciation:		
on planes, $893,500 @ 20%	$178,700	
on motors, $1,054,000 @ 30%	316,200	
on other equipment, $1,869,179 @ 5%	93,459	$ 588,350
With the stabilization of air transport the depreciation rate will undoubtedly fall.		
Taxes:		
on property, $3,816,679 @ 1%	$ 38,167	
on gasoline, $180,534 @ 10%	18,053	
miscellaneous, excluding income taxes	5,000	61,220
Insurance:		
on flying equipment, $1,947,500 @ 17½%	$340,812	
on other property, $1,869,179 @ ½%	9,346	350,158
Inventory figures from 1926 Report of Postmaster General, p. 127, are for June 30, 1926. Estimates for liability insurance of various kinds are omitted, since the rates are very indefinite.		
Interest on investment:		
$3,816,679 @ 7%		267,167
Traffic, commercial, and research		300,000
		$1,566,904

[41] The railroad operating costs were $2.10 and $5.71 respectively. This estimate of $1.33, or of $1.01 per mile if we exclude the costs of fields and lights, represents a fair average of results obtained by private companies both in this country and abroad. Writers who state that the airplane ton mile cost is equal to or lower than the railroad charges usually consider only the additional costs due to the making of a particular trip. The customary total cost per mile for single-engined planes seems to hover around $1; that of multiengined planes ranges from $1 to $1.50. The operating costs alone are usually about 50 cents less than the total costs. The costs depend somewhat also on the speed, load, and other factors.

[42] A German builder has planned a superplane which will have a capacity of 44,000 pounds, or 130 passengers and 13,200 pounds of baggage, mail, and express. *Scientific American*, December, 1926.

selves to an extremely exclusive traffic which will be unprofitable.

2. As to the desideratum, it ought at the outset to be pointed out that, judging by present sentiment, commercial aviation in the United States, building on the progress made by the United States Air Mail, must, and chooses to, get along without a direct subsidy. Foreign nations also hope ultimately to make commercial aviation independent of government aid. The amount of the desideratum must depend upon numerous circumstances. Officials of the Dutch K.L.M. have stated that their company can be commercially independent if its operation costs are reduced to 39 cents per ton (2,000 pounds) mile. Sir Sefton Brancker, Director of British Civil Aviation, states that the operating costs, excluding depreciation, of the standard plane is today 73 cents per ton mile. This, he says, can be reduced by 50%. Paul Henderson, formerly in charge of the United States Air Mail and now General Manager of the Na-

TABLE VI. RECORDS OF UNITED STATES CONTRACT AIR MAIL ROUTES, JANUARY-JUNE, 1927

Route and Contractor	Date Opened, 1926	Miles Flown Scheduled Trips	Mail Carried (*Pounds*)	Population Served	Mail Carried per 1000 Population (*Pounds*)	Rate per Lb. Paid Contractor	Air Mail Income	Income per Mile Flown
New York-Boston (Colonial Air Transport)	July 1	53,020	8,164	7,319,716	.183	$3.00	$ 24,488	$0.46
St. Louis-Chicago (Robertson Aircraft Corp.)	Apr. 15	63,987	16,999	3,676,628	.770	2.53	43,025	.67
Dallas-Chicago (National Air Transport)	May 12	343,708	51,274	3,664,875	2.332	3.00	153,654	.44
Los Angeles-Salt Lake (Western Air Express)	Apr. 15	204,972	88,746	697,087	21.221	3.00	266,235	1.29
Salt Lake-Pasco (Walter T. Varney)	Apr. 6	147,340	22,612	157,352	24.004	3.00	67,839	.46
Detroit-Cleveland (Ford Motor Co.)	Feb. 15	78,144	826	1,790,519	.078	1.08	894	.01
Detroit-Chicago (Ford Motor Co.)	Feb. 15	81,732	4,741	3,695,383	.213	1.08	5,121	.06
Seattle-Los Angeles (Pacific Air Transport)	Sept. 15	212,454	31,420	2,266,948	2.311	(*a*)	89,375	.42
Chicago-Twin Cities (Northwest Airways)	June 7 (*b*)	88,320	11,418	3,804,553	.500	2.75	31,401	.35
Cleveland-Pittsburgh (Clifford Ball)	Apr. 21, 1927	16,959	4,674	1,385,184	1.783	3.00	14,021	.82
Pueblo-Cheyenne (*i*)	May 31	72,400	15,606	343,474	7.583	3.00	46,819	.65
Pilottown-New Orleans (New Orleans Air Line)	1923	25,920	37,896	(*c*)	.....	$100.00 round trip	16,208	.63
Seattle-Victoria (Edw. Hubbard)	1920	10,764	25,836	(*c*)	.....	$200.00 round trip	14,200	1.33
Total or Average		1,399,720	320,202				$773,280	$0.55

SOURCE: Reports of Aeronautics Branch, Department of Commerce.

(*a*) $2.81 up to 1,000 miles; $3.00 over 1,000 miles. (*b*) Contract surrendered by original company; route later reopened to bids.

(*c*) Impossible to calculate, since these are foreign mail routes.

(*d*) Figures assume that each passenger travels entire distance. Rates are got either from newspaper accounts or figured at 13c per mile.

(*e*) Taking average pound mile rate of $0.0015, which is the figure estimated by the Aeronautics Branch, Department of Commerce.

tional Air Transport, Incorporated, gives 30 cents or 40 cents per ton mile as his estimate.[43] These estimates, from widely different sources, roughly agree.

3. Suppose we assume that the total cost per ton mile (of hauling one ton for one mile) must be reduced to 60 cents. How may this desired cost be attained? There are in general two methods: (1) reduce the absolute costs, (2) increase the traffic.

As to the first, an engineering problem, it will be necessary to increase the pay load per horsepower[44] and to decrease the costs, both operating and fixed. The average pay load per horsepower of 18 typical American transport machines possessing a horsepower above 150 is about 4.8 pounds; the average total weight per horsepower is 15.3 pounds. This compares with 6.9 and 18.2 for four German; 4.7 and 13.5 for five

[43] Select Committee, p. 282.

[44] This problem can be subdivided: (1) increase the total weight per horsepower, (2) increase the ratio of pay load to total weight.

TABLE VI. RECORDS OF UNITED STATES CONTRACT AIR MAIL ROUTES, JANUARY-JUNE, 1927 *(Continued)*

Route and Contractor	Other Sources of Income				Total Income	Total Income per Mile (*g*)	Trips Scheduled	Trips Completed	Average Load (*Pounds*)
	Passengers	Probable Income (*d*)	Express (*Pounds*)	Probable Income (*e*)					
New York-Boston (Colonial Air Transport)	231	$6,930	100	$ 33	$ 31,451	$ .59	302	241	226
St. Louis-Chicago (Robertson Aircraft Corp.)	2	70	21,651	8,769	51,864	.81	240	231	169
Dallas-Chicago (National Air Transport)	59	7,632	.....	.....	161,286	.47	362	287	219
Los Angeles-Salt Lake (Western Air Express)	147	11,025	20	18	277,278	1.35	362	348	339
Salt Lake-Pasco (Walter T. Varney)	.....	.....	.....	.....	67,839	.46	332	278	81
Detroit-Cleveland (Ford Motor Co.)	.....	.....	646,599	150,334 (*f*)	151,228	1.93 (*f*)	574	528	1,226
Detroit-Chicago (Ford Motor Co.)	.....	.....	364,099	151,829 (*f*)	156,950	1.92 (*f*)	306	294	1,255
Seattle-Los Angeles (Pacific Air Transport)	318	41,976	.....	.....	131,351	.62	310	198	479
Chicago-Twin Cities (Northwest Airways)	.....	.....	.....	.....	31,401	.35	258	230	49
Cleveland-Pittsburgh (Clifford Ball)	4	63	.....	.....	14,084	.82	142	133	41
Pueblo-Cheyenne (*j*)	2	45	.....	.....	46,864	.65	362	362	44
Pilottown-New Orleans (New Orleans Air Line)	.....	.....	.....	.....	16,208	.63	324	324	117
Seattle-Victoria (Edw. Hubbard)	11	112	.....	.....	14,312	1.33	142	138	203
Total or Average	774 (154,800 Lb.) (*i*)	$67,853	1,032,469	$310,983	$1,152,116	$ .82	4,016	3,592	419

(*f*) Most of the freight was Ford Company freight bringing no direct revenue, but it is assumed that this was worth $0.0015 to the Ford Company.

(*g*) There are also miscellaneous revenues from non-scheduled operations, such as taxi, photography, sightseeing.

(*h*) Average load $= \frac{\text{weight carried}}{\text{number trips completed.}}$ This makes no allowance for incomplete trips involving the forwarding of mail by train.

(*i*) One passenger and baggage assumed to weigh 200 pounds.

(*j*) Operated up to recently by Colorado Airways. Contract has been cancelled and, pending new bids, service was operated by the Boeing Company. It is now maintained by the Western Air Express.

British; and 6.8 and 16.1 for five French planes.[45] Comparing these figures with those for the load per horsepower of his automobile, the reader will note that for the carrying of ordinary traffic the airplane is at a great disadvantage. This will obviously never be equalized, but great progress is being made in increasing the amount of pay load per horsepower. The first engine built by the Wright brothers weighed about 14 pounds per horsepower compared with the present average of about 1.5 pounds for military, and a little over 2 pounds for commercial craft. The air-cooled engine is of great advantage in this respect.

As to the possible decrease of costs, fixed charges may be reduced through the quantity production of planes and motors.[46] Operating expenses may be reduced through the reduction of insurance rates, which is sure to follow the wider use of air transport, and through improvements in construction leading to diminshed resistance, increased lifting power, and a decrease in the cost of maintenance and overhauling.[47]

The increase of traffic, involving the spreading of fixed and operating costs over a wider area, is fundamentally a business problem. The present-day airplane[48] is in somewhat the same position as were the pioneers in other fields of transportation. Costs would not fall until traffic was augmented; traffic could not increase until the rates were lowered.

The high cost per ton mile of the Government Transcontinental Air Mail was due mainly to the inadequacy of the pay load.[49] Table VI shows the experience of the private air mail operators during the first half of 1927. An average pay load of only 419 pounds, including the unusual Ford figures, enabled the companies to earn an average income of 82 cents a mile.[50] The pay load capacity of the airplanes used ranges from 500 to 1,500 pounds.

It has been urged that the air letter rates be reduced and that parcel post at

[45] Figures for French, German, and British planes computed from Table I of article by Karl Ruhl, "Verkehrsgeographie und Technik des modernen Luftverkehrs in ihrer Wechselwirkung"; *Zeitschrift für Verkehrswissenschaft*, 2 Heft, 1927, pp. 65-82.

[46] It has been estimated that by quantity production and improved methods the cost of a 200-horsepower engine can be reduced from $4,000 to $1,500.

[47] For engineering and cost problems, see Black, *Transport Aviation*, chapters vii-xi, xiii-xv; *Civil Aviation, a Report*, chap. ii; and various issues of the *Journal of the Society of Automotive Engineers*, *Automotive Industries*, and the *National Aeronautic Association Review*.

[48] No reference has been made in this article to that other branch of commercial aeronautics, the dirigible. Germany pioneered in this field, her commercial lighter-than-air craft prior to 1914 having flown 172,000 miles and carried more than 10,000 passengers. Under our present stage of technical progress, the economical nonstop flight of the commercial airplane is from 200 to 500 miles. A shorter flight involves too much delay at the terminals unless there are special compensating advantages; a longer flight means an encroachment of the fuel on the pay load. Even though the weather obstacles should be met, it is doubtful whether a nonstop transatlantic airplane route will be economical. Several floating landing fields, in addition to the stops in Newfoundland and Ireland, will be required. The dirigible, with its high nonstop range and large pay load, may perform a very important function on long trips over large bodies of water or over great desolate areas.

[49] Cost per ton mile $= \frac{1 \text{ ton}}{\text{average load}} \times$ cost per mile, or $\frac{2{,}000}{371} \times \$1.33 = \$7.18$, or, on the basis of Post Office statistics, $\frac{2{,}000}{371} \times \$.73 = \$3.94$.

[50] The exclusion of the Ford figures would greatly reduce the average pay load. Figures recently announced for July to October, 1927, reveal an increase in the mail income per mile over the January to June period on 11 of these routes and a decrease on only two. The San Francisco–Chicago section, operating since July, earned an air mail income of 52 cents a mile, and the Chicago–New York section, opened September 1, earned 62 cents a mile.

a low scale of charges be introduced, so as to encourage more extensive use of the air mail. At $1.25 a mile, the total cost of running an 1,800-pound pay load multiengined airplane from New York to Chicago would range from $900 to $1,000. Assuming 40 letters to the pound of air mail and 200 pounds per passenger, the reader can readily construct tables showing the points of economical operation with varying rates, used pay loads, and proportions of mail, passengers, and goods. These computations will illustrate the business problem confronting air transport companies.

Lack of public confidence in air transportation is thus an important element in retarding its development both in this and most foreign countries. On the other hand, there is every reason to expect a gradual reduction in the cost of the service and also a growing confidence in its dependability on the part of the public. All indications, therefore, point to the future position of aviation not only as supplementary but in many as a substitute for the now existing means of transportation.

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THE material in the Departments of the Review presented by the Student Editorial Board is chosen with regard to its interest to business executives and to the possibility of utilizing most effectively the resources at the command of the members of the Board.

The first Department, "Summaries of Business Research," comprises summaries of the results of the investigation of various business subjects. "Case Studies in Business," the second of these Departments, was suggested by one of the outstanding characteristics of the Graduate School of Business Administration, the case method of teaching. Case studies are based upon the actual experiences of business concerns; to avoid disclosure of confidential material, however, it is necessary to disguise the names of the concerns. The third department, "Legal Developments Significant in Business," has been added to permit a survey of the steps which are now being taken and which possibly should be taken in the future by courts and legislative bodies to improve the quality of the service that law can offer to business. The last Department contains critical reviews and short descriptions of new books of interest to business men.

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SUMMARIES OF BUSINESS RESEARCH

THE POINT PLAN FOR INDUSTRIAL CONTROL[1]

DURING recent years an increasingly large number of well-known and representative industrial firms have adopted a new method of industrial control. These companies, which include some of our best managed business units, have effected substantial savings by means of this new tool of management.

A Common Unit in Industry

The plan involves a new conception of the industrial plant as a converter of human energy. Modern factories fashion varying types of goods, all of which —whether electric motors, cotton goods, shoes, phonographs, spark plugs, or automobiles—represent the energy of man applied to materials through the medium of tools and machines.

In the electric power industry, energy is measured in kilowatt hours, whether it is used to drive a motor, light a house, or heat a room. This common unit of measure for electrical energy has facilitated operation and control of central power stations. Today, human energy is likewise subjected to a similar measurement, the unit of which is the "point." Since the point may be used as a common measure of human energy in industry it may serve as the basis for a broad plan of industrial control.

A point represents the energy expended or the work done during one minute by an average man working at a normal, maintainable rate of speed. He may apply this energy in as diverse ways as there are products and processes in industry.

One use of the point for purposes of factory control is as a measure of labor performance. For each operation or process a point standard—that is, the number of points of human energy involved in the task—is set. Since the rate of production[2] is expressed in "points per hour," commonly known as the "point hour," one can compare the effectiveness of the individual man with the effectiveness of his fellow workers in the same department. Moreover, the individual laborer's point hour may be compared with that of men working in other departments or even in other industries, since in each case the measure of effort, the point, is common to all operations and to all industries.

The point hour of the individual worker or a group of workers is also used as a basis of remuneration. Few men object to the principle of paying productive workers on the basis of effort expended. Some, however, argue that the rate of effort of the nonproductive workers, considered by itself, is not an adequate basis of pay for indirect workers or supervisors. As proof of this contention, they cite the experience of vari-

[1] This article is a summary of a thesis presented for the course in Industrial Accounting in the Graduate School of Business Administration, Harvard University, May, 1927. The thesis was prepared by F. R. Baker, W. J. Burney, R. C. Grimm, E. J. Hanley, E. P. Learned, D. E. LeFavour, F. W. Miller, P. W. Parsons, and W. D. Sleeper.

[2] The total of points produced is calculated by multiplying the pieces or quantity finished in an operation or process by the point value of the operation or the point value of the quantity unit. These total points divided by the actual time required to produce them give the actual point hour or rate of production.

ous factory managers who undertook to pay their nonproductive workers bonuses predicated upon the output and savings achieved by the direct workers, but were later forced to abandon the plan because they found total labor costs were advancing while the foremen were still receiving bonuses for efficient operation.

It is obvious that any method of bonus payment, to be permanently successful, should consider total labor costs as well as productive labor costs and speed. To meet this necessity, the point plan establishes a standard total labor cost, but a cost per point, rather than a cost per article or part. Comparison of standard and actual costs per point[3] then furnishes a test of the economy of operation. The supervisory and service staff, under this plan, is paid a premium on the basis of departmental effectiveness—the point hour of the productive workers—modified by a figure known as the economy factor, which is the ratio of the standard cost per point to the actual cost per point.[4] The point hour of the productive force modified by this factor gives the supervisors' point hour.

Time Studies Essential

The simplicity of the concept of a factory as a converter of human energy is apparent. The idea of paying workers on the basis of productive effort is attractive. Yet to secure this simple control and payment mechanism, it is necessary to determine by scientific time study methods the points of work involved in each operation.[5]

[3] The actual cost per point is calculated by dividing the total labor pay roll by the points produced in the pay roll period.

[4] If conditions are perfect, the result of the above mentioned calculation is 1; if the actual pay roll is excessive, the result is less than 1.

[5] It is beyond the scope of this article to describe at length the time study method used; yet a brief summary, which may clarify a few points in the article, can be given.

The significant feature of the time study centers about the rating of human effort. A time study man must record not only the times of each element of the job and the quantity of work completed in the case of a process study, but he must also estimate the rate at which the operator is expending human energy in his task. A scale of rates is known to the time study man. The central point of this scale is the 60 point hour which represents the rate (60 points per hour) at which the normal man without incentive for extra speed will spend energy day in and day out. In many cases, the factory management designates the man whom it considers to be a normal worker to be time-studied.

The layman may say that it is impossible to have a standard measure of effort that is comparable even to two time study engineers. The fact remains, however, that the engineers who are trained to take and supervise these time studies do have such a definite scale in mind. Independent time studies have established the accuracy of the point as one tangible measure of human effort. The time studies are so carefully checked that the probability of error is very, very small. Wherever possible, men who are accustomed to the "feel" of the job by experience in it are trained to take time studies under the direction of the installing engineer. This practice makes for accurate standards, overcomes opposition of fellow workers who prefer to trust an insider to an outsider, and not infrequently reduces the cost of installations.

The point value of an operation is set substantially as follows. The facts assumed for illustration are: 240 seconds of elapsed time, operator working at a 55 point hour. To put the work on the standard 60 point hour basis, calculate as follows

$$240 \text{ seconds} \times \frac{55}{60} = 220 \text{ seconds}$$

for the standard time. In practice, these figures would be adjusted for a rest factor. This factor may be ignored for the purposes of the present exposition without impairing the value of the illustration or the understanding of how the plan works. The 220 seconds are converted into points by dividing by 60, which gives a point value for the operation of 3⅔ (the standard calls for a point a minute). This point value is applied to all work that passes through this particular operation.

Now suppose a process illustration in which product finished is 2,250 pounds, estimated point hour of operator is 75, and elapsed time is 1½ hours. At a rate of 75 points per hour, the operators should have produced 112.5 points in one hour and a half. Dividing 2,250 pounds by 112.5, the result is that 20 pounds of product are worth a point, or a pound is equivalent to .05 of a point. At a 60 point hour, then, a man would only turn out 1,200 pounds, which at .05 points to a pound is 60 points of production. This point value per pound will be applied to all work that goes through the particular process.

There is a fundamental difference between point standards and many other time study standard rates. A typical piece rate, for example, involves payment for the actual time required to do the job plus payment for delays that may occur through no fault of the operator. These delays are generally estimated and are included in the piece rate as finally set. For each piece produced a company pays something for delay whether or not delay occurs. Point standards, on the other hand, do not include an allowance for possible delays, so that the standard cost finally set is necessarily lower than it would be under piece rate methods. Delays are paid for only when they occur. If there are no delays and the workers produce at standard or above, the actual cost per point is the standard cost per point.

Analysis of the causes of the variations from standards under the point plan tends to their elimination. The foreman and his staff have a continual incentive to maintain conditions at or above standard, so that the economy factor will be satisfactory. The greater are the variations below the standards set, the greater are the excess costs, the economy factor thus becomes lower and lower, and the indirect worker's chance of premium less and less. The productive laborer loses from being below the standard, because he then receives only his hourly rate of pay; whereas, as will be shown presently, he can supplement this hourly rate with premiums by achieving results above the standard. Lastly, the senior management views excess costs as its responsibility. In order to reduce excess costs charged to profit and loss as a result of delays, since the delays are not a part of the standard cost, the operating officials make every effort to eliminate permanently what so many people have called inherent delays.

Notwithstanding the different treatment of delays under point methods and piece rates, point standard costs from the accountant's point of view are essentially piece rates. By definition, the standard cost per point for direct labor is the hourly base rate of pay divided by 60, 60 points being the standard production per hour.[6] The accountant charges production costs with the standard cost of each point produced, though a brief summary of the wage payment plan will show that some of this cost is actually paid to the nonproductive workers.

Under the wage incentive plan of the point system[7] the worker is paid the base rate, whatever it may be, for the presence of his skill in the shop, whether he is working or idle. When working on standards and producing goods in excess of 60 points an hour,[8] he is paid a premium on these excess points at a definite rate. This rate is viewed by the management as three-fourths of the standard direct labor cost per point at his base rate. The worker, however, is told that each premium point he earns is worth 1¼% of his hourly base rate.[9]

[6] For example, an hourly base rate of 60 cents gives a standard cost of $1 per 100 points; a base rate of 42 cents gives a standard cost of 70 cents per 100 points.

[7] The point system is known in the business world as the point system and the Bedeaux system.

[8] The 60 points per hour refers to the entire working period on standard; it does not include delayed time, which is paid for at the hourly base rate. The soundness of this calculation is clear. No company would find it sound policy to pay premiums for a short period of the day, for the men might adopt the plan of making premiums for part of the day and working at a low speed for the balance of the time.

[9] With a base rate of 60 cents, the standard direct labor cost is 1 cent a point. The premium value of the point is 60 times 1¼%, which is ¾ of a cent, an amount equal also to three-fourths of the standard direct labor cost.

Each day the results of the previous working period are posted on sheets which show for each laborer his base wages, the point hour made, premium points earned and the dollar value thereof.[10]

The one-fourth of the standard direct labor cost which is charged to jobs or processes, but not paid to the direct laborer on premium points, is set aside in a premium reserve which is later charged for the premiums earned by the indirect workers.

Changes in Cost Classifications

The point system makes a change in some common classifications of expense. For example, a direct productive standard may now be set for a job such as the packing operation in a shoe factory, a task which in former practice was considered nonproductive. The fact is that it had been inconvenient in many cases to charge packing costs as direct costs because it had been difficult to find the proper basis for making the charge. It is true that although the shoes are not changed in material form by the packing operation, neither are the productive operations complete until the shoes are ready for market, and there is a measurable number of points of effort involved in this task, the cost of which each pair of shoes should bear. A standard cost for this operation is set on the basis of time studies; the operation is essentially the same as other direct productive work, and the costs for this function are now considered as direct labor costs.[11]

Standard indirect labor costs are also set for the service functions, such as supervision, clerkship, maintenance, and handling, on the basis of time studies and the wages paid.[12] This standard indirect labor cost is chargeable to jobs or processes on the basis of the productive points produced.[13]

Nonproductive workers, as explained earlier in the article, receive a premium on the basis of effort expended. If the productive force exerts itself in excess of standard speed, thus increasing the demand for service from the nonproductive group, it may be assumed that the service workers are also exerting more than standard effort, provided there is no change in their number. They are entitled, therefore, to reward for the extra effort. When production declines

[10] If a 60 cents an hour employee produced 560 points in 8 hours on standard, he makes a 70 point hour for the day, 10 points an hour above standard, and he is entitled to 80 premium points at ¾ cents, or 60 cents premium for the day in addition to his base pay of $4.80. His average hourly earning has been increased by his own effort from 60 to 67½ cents an hour.

[11] Some individuals prefer to call this type of labor expense a direct cost while others choose to classify it as indirect work whose cost is absorbed in some sort of overhead rate. Either procedure or any other may be followed under the plan.

[12] The time studies determine the amount of effort required at a 60 point hour by the indirect laborers to serve a given group of productive workers who are also working at a 60 point hour. A single standard indirect labor cost is developed for each department. In order to facilitate the use of this cost when actual results are later compared with it, standard ratios which reflect on a time basis the relationship between each indirect function and the volume of production are developed. The ratios as well as the actual indirect cost are calculated each week from the current figures and are checked against the standards, to determine which functions are out of line with the production schedule and therefore need adjustment.

[13] The accountant may raise a question as to whether all the elements of indirect labor included in the standard should be charged to product on the same basis. In applying the standard indirect cost to the productive points the point system virtually distributes this cost on the basis of direct labor hours. When workers maintain a level rate of production, the point takes on certain time aspects. In a department with different types of machines of unlike labor service cost, a machine hour rate may be preferable to the use of the direct labor point basis of charging indirect labor cost to product. Each situation from the point of view of the accountant must be considered by itself.

so that fewer direct workers are required, the nonproductive force does not have a full-sized job, and in order to secure economy of operation, their numbers or the time which they spend on the work must be reduced, else premiums will not be earned. Premium points for indirect workers have a monetary value which is known to the workers in advance, just as in the case of productive workers.[14] Any premiums paid the service staff are charged to the premium reserve established from the one-fourth of the standard direct labor cost already mentioned.

Some accountants may object to paying nonproductive workers premiums from a reserve that was included in the direct labor charges to product. A glance at the set-up of the accompanying analysis sheet, Exhibit A, will show, however, that any classification of expense may be used, because productive and nonproductive hours are carefully separated.

Nevertheless, the analysis sheet is usually designed with the requirements of the factory foreman rather than those of the cost accountant in view. Attainment and maintenance of standard cost is the goal set for the foreman of each department. Under the point system, the foreman must properly distribute work to operators, reduce idle time, and effectively utilize service help if he is to make sure of the premium which is the reward for efficient and economical operation of his department.

In summary, this new method of industrial control offers a basis for a sound wage plan: payment for human effort, scientifically measured. Moreover, the plan makes possible accurate comparisons between men, departments, and plants, regardless of the wage rates paid or the type of work done. Furthermore, the system concentrates attention upon costs as well as upon productive efficiency. It now remains to appraise the results of the point system in practice.

The System in Practice

The statements of results made in the remainder of this article are based primarily upon intensive observation and study of four plants selected as representative users of the point system; a secondary basis for the statements was provided by the experience of a variety of companies whose use of the system was not investigated in detail. Three of the factories selected for study were in the process of installing the point system. In those plants the range of study extended from the departments in which the plan had not been applied, through the departments in which time studies were being made, to the departments in which a smooth, complete, working installation had been accomplished. The fourth plant had been operating under the point system for some time and was engaged in divising new applications, conceived in many cases by its own management, of the point principles already in use.

In one plant in which the system was in process of installation a walkout of workmen of one department was a failure because of men of other departments who were already operating under the point system would not join the walkout. The workers were naturally distrustful of innovations. They did not understand the system and they did not care to learn about it. They were sure without trial that the standards would be too high, and they exercised ingenu-

[14] With a supervision point hour of 70 for the week, a clerk earning 42 cents an hour would receive his base pay and would be entitled to supervision premium on 480 premium points (10 per hour times 48 hours) at the rate established by the company.

DEPT. "X"

	Week Ending	Equivalent No. of Employees: Dir.	Equivalent No. of Employees: Indir.	"Points": Operations on Standards 1-1	"Points": Set-up on Standards	"Points": Deduct for Bad Work	"Points": Net Total "Points" 1-1	Actual Hours Worked on Standards	Operators "Point" Hour*	Hours Spent on Work without Standards: Standard Prod. 2-1	Hours Spent on Work without Standards: Reserve-leg 2-2	Hours Spent on Work without Standards: Special Work 2-3	Hours Spent on Work without Standards: Hours due to other Depts. 2-4	Hours Spent on Work without Standards: Actual Hours Worked without Standards	"Points" to equal Standard 3-0	"Points" For Inspec. Dept. Rejects: Gross Total "Points"	"Points" For Inspec. Dept. Rejects: Deduct for False "Rejects"	"Points" For Inspec. Dept. Rejects: Net Total Points" 6-1
1	5-22-26	7.8	4.3	10,520			10,520	152.9	68.8	119.5		40.5		160.				
2	5-29	7.4	3.8	10,577			10,577	148	71.4	85.5		35.		120.5	79			
3	6-12	8.6	3.3	9,712			9,712	129.5	75.	47.7		76		123.7	125			
4	7-3	7.3	3.2	13,736			13,736	207.6	66.1	55.5		17.4		72.9	986			
5	8-21	5.5	2.6	9,227			9,227	137.5	67.1	33.4		41.3		74.7	84			
6	9-4	7.3	2.3	14,711			14,711	197	74.6	44.8		36.4		81.2	398			
7	10-30	7.3	2.5	15,503			15,503	199.5	78.1	39.5		67.2		106.7	64			
8	11-27	6.6	2.7	16,158			16,158	183.3	88.1	38.9		25.9		64.8				
9	12-18	6.3	2.7	13,976			13,976	228.2	83.2			21.9		21.9	120			
10	2-5-27	6.4	2.6	22,219			22,219	262.6	84.8			17.4		17.4	91			
11	3-5-27	6.3	2.6	20,599			20,599	247	83.4			18.		18.				
12																		
13																		

	Division of Payroll: Total Payroll	Total "Point" Payroll	Actual "Point" Payroll	Standard "Point" Payroll	Actual Indirect Payroll	Standard Indirect Payroll	Actual Overtime Payroll Dir. & Ind.	Work without Standards	Excess Cost over Standard "Point" Payroll: Departmental Charges: Due to Bad Work	Due to the Dept.	Due to Mach. Allow.	Due to Gear	Due to Cost Adjustment	Total	%	Rejects: Over-head Credit	Deduct for False Rejects
1	302.15	222.05	116.50	73.64	115.55	31.56		70.10		2.14	24.19	16.53		42.86	58		
2																	
3																	
4																	
5	184.31	152.94	84.78	64.59	68.16	27.68		31.37		1.51	12.77	6.01		20.29	31		
6																	
7																	
8																	
9																	
10	259.38	251.15	180.81	156.02	70.34	66.87				5.34	14.61		4.84	24.79	14		
11																	
12																	
13	*Red figures																

EXHIBIT A: POINT SYSTEM ANALYSIS SHEET, DEPARTMENT X.
Selected weeks; including first week under Point System to close of field survey in this department.

ity in thinking of objections and methods to delay its installation. Once the men were induced to give the plan a fair trial, however, the changes in the pay envelopes converted them to the plan.

The outstanding feature of the point system is that it works. It works because it is based on a combination of psychological factors which have a favorable reaction on the worker's mind; it offers incentive for extra work, it furnishes an accurate measuring device to show the worker when he has done well and when he has done poorly, and it enlists the administration in the person of the foreman in planning the work to avoid delays and interruptions.

Effect on Direct Labor

The system is so devised that the direct worker helps himself, his fellow nonproductive worker, and his company, by increasing his rate of output. Many companies using the point system have been able, as a result of increased effort and productiveness on the part of the laborers, to spread their overhead expenses over a larger volume of business. The increased product of the workers in one case observed enabled the company to avoid purchase of additional machinery. In return for the extra efforts, the companies guaranteed standards against change, thereby eliminating one disad-

HOURS ALLOWED							Actual Total Hours On Standards and Hours Allowed	Dept. "Point" Hour*	INDIRECT HOURS						Total (Hours)
Interference Factor 4-6	Waiting 4-3	Breakdown 4-2	Reoperation 4-3	Mach Allow 4-4	Misc 4-5	Actual Hours Allowed			Supervision 5-1 12-1	Handling 5-2 12-2	Clerkship 5-3 12-3	Maintenance 5-4 12-4	Shutdown 5-5 12-5	Set-up 5-7	
	4.4	.7		57.6		62 7	215.6	487	96.4	8 2	20 1	81.8			206.5
	2.1	.1		51.7	2.	55 9	203 9	51 8	93		17 5	71 1	7		182 3
	7			46.6	.9	48 2	177	547	35		15	57.9	6.3		116 2
	3.4	.1		347		38 2	245 8	55 8	32.8	29 1	18 8	53 8	2 6		138 1
	1 5	1		30.4	.6	32 6	170 1	54 2	33 8	24 6	18 8	45.7	.8		123.7
				40	1 2	41 2	238.2	61.7	33 8		18 8	48 1			100 7
				40 8		40.8	237 3	64 8	40.2	5 8	21 8	50 9			118.7
	3.2	.3		34.3		40 5	223 8	72 2	33 8	13 3	19	53 9			120
	5 6	10.1		31.5	3	50 2	278 4	68 1	89.2		20.	68.2			127. 4
	6.9	2 3		34.8	2	46.	(Total) 308.6	(114) 72 2	44 6		21.1	58 3			124.
	2.3	.4		33.9	1.8	38.	(Hours) 285 4	(119) 72 1	42 5		19.7	60.8			123.

COST PER "100 POINTS"											
Actual Direct	Standard Direct	Actual Indirect	Standard Indirect	Actual Total	Standard Total	Ratio of Standard to Actual Total	Supervision "Point" Hour*	Base for Supervision Premium	Premium "Points"
1.11	70	1 09	.30	2 20	1 00	46	22 .4	60	
1.03	70	72	30	175	100	57	29 5	60	
1.07	.70	.62	.30	1.69	1.00	58	31 7	60	
.98	.70	.54	30	1.52	1 00	66	36 8	60	
.92	.70	.74	.30	166	1 00	60	32	60	
.91	.70	.31	.30	1.22	1.00	82	50.6	60	
.96	.70	.33	30	1 19	1.00	83	53 7	60	
.83	.70	.34	.30	1.17	1 00	86	62	60	2
.84	.70	.36	.30	1 20	1 00	83	56 5	60	
(.74) .91	.70	.31	30	(1.05) 1 12	1 00	(95) 89	(173) 63.2	60	(173) 3 2
(.73) .80	.70	.32	30	(1.05) 1 12	1.00	(95) 89	(178) 63 2	60	(178) 3.2

*Red figure

EXHIBIT A: POINT SYSTEM ANALYSIS SHEET, DEPARTMENT X.
Selected weeks; including first week under Point System to close of field survey in this department.

vantage for the worker which has appeared under piece rates unscientifically set. Point standards are changed only when the operation is changed.

The laborers were protected against individual hourly rate changes as well as against changes in the basic standards. The general level of wage rate is, of course, adjusted under this plan as under most others in accordance with market conditions, but the individual worker is not likely to be discriminated against by a foreman who tries to raise the rates of his "favorites." With the posting sheet information on premium points and rates of pay conspicuously posted each day, there was little opportunity for unfair discrimination in rates of pay. Ordinarily, all men in the same type of work received the same hourly rate of pay.

The relative efficiency of laborers was so clearly indicated in a form that could readily be used that the management found it an aid in placing men where they would be most useful. The worker who had been placed in a job for which he was not suited showed a low point hour. He was shifted then to other work where he had a better opportunity for increased earnings. This change is likely to be made more quickly under the point system than under other conditions where a ready indicator of in-

dividual effectiveness is not available. Similarly, the worker was kept where he earned the most, since it was here that he was most valuable to the management.

A worker of a low grade of intelligence may find it difficult to grasp the meaning of the point. Nevertheless, any laborer is capable of earning a premium if placed at a job for which he is fitted, and he will not fail to notice the additional earnings in his pay envelope, even though he may not comprehend the system.

The management finds as many advantages in the application of the plan to productive workers as the laborer himself, for the company benefits as much from the elimination of favoritism in setting wage rates as its employees. This elimination of favoritism saves unnecessary expense and fosters good will among the employees. The posting sheet shows the management clearly to what extent rates differ for the same work. If differences are evident, they can be investigated, while if they are not shown, the company may be losing money and stirring up discontent without knowing it.

The posting sheet, moreover, tends to stimulate competition among workers and to arouse a feeling of pride in accomplishment. The competition may be not only between individuals in the same department, but also between any two individuals in the plant, between whole departments, and even between different plants.

Nonproductive Workers Also Gain

The nonproductive worker gains from the operation of the point system. He is actually rewarded for increased effectiveness. He is made partly responsible for the rapid output of productive workers to whom he furnishes materials, supplies, and services. Each group gains from having the other group interested in its success.

The method of setting and calculating the indirect standards and the basis of indirect premium are too complicated for more than a few of the men to understand. What the men do learn, however, is that when they work faster and spend less time idly they earn a premium.

The foreman finds in the supervision premium a direct reward for improved efficiency and savings in total labor cost. His control of the men in his department is greatly facilitated by the facts which the point system records present in clear form. The foreman is dealing with actualities and can base his decisions on them, whether they appear in the individual records of laborers or in the group summaries which show both effectiveness and economy of operation.

Manufacturing control through the records thus marks the second fundamental advantage of the point system. It is impossible, of course, to separate completely the wage incentive idea from the control aspect of the plan; yet the possibility of factory control with the point system makes it more than a wage plan, seems to account for much of its popularity, and furnishes a basis for the permanent usefulness of the system.

Effective Foremen Essential

Effective foremen are required if point system control is to be thoroughly satisfactory. In most instances in which the point system is installed, foreman training in the use of the analysis sheet —essentially a foreman's report—is a practical necessity. Wherever foremen receive cost reports in addition to the usual production and schedule data, educational work among them on the use of

the cost figures is expedient; the point system is no exception in this regard. Foreman conferences often prove of positive advantage for the development of extensions of the plan. When the average foreman first considers the system and the analysis sheet, he tends to be overwhelmed with its complexity, can seen nothing of value in it, and is certain that the plan can be of no possible service to him. It is wise, therefore, for the management to sell one idea at a time to the foremen, leading thus to their whole-hearted acceptance of the plan.

Maintenance of standard costs as set by the engineers is the ultimate goal and responsibility of the foreman. The foreman depends upon the data of the analysis sheet[15] to furnish him with the analyzed facts which are the basis of action. A daily analysis sheet similar in form to the upper half of the weekly sheet is common to most plants using the system. Basic to the daily form are daily checking cards and time allowance sheets for the individual workmen. These records are used for cost, pay roll, and control purposes.

Any weak spots among producing workmen are disclosed by a hasty survey of the point hours of the men. The foreman, therefore, knows with what men he must deal if he is to improve the average showing of his department. It is the average point hour of the laborers, moreover, that figures in the calculation of the supervisors' point hour; consequently, the foreman first tries to bring all men to standard or above, and then he directs his efforts to raising the point hours of all the men to a level that will bring premiums to all.

The second labor item that the foreman endeavors to control is the idle time. Earlier in the article, the effect of idle time on costs was indicated. The causes of idle time are classified daily by hours and minutes and are summarized weekly on the analysis sheet by hours and costs. Furthermore, idle time costs are shown on the analysis sheet as "Due to the Department," and the responsibility therefor is placed upon the foreman.

If certain items of allowed time cannot be eliminated at once, the cost accountant may be forced to include an estimate of the cost of this normal amount in his burden rate, since the point system standard cost makes no provision for the delay. The management, moreover, may find it desirable to adjust the base of supervision premium to a lower figure than 60 points an hour if the responsibility for non-elimination of the delay does not rest with the foreman. Take, for example, the case on machine allowance time[16] shown in Exhibit A. The excess cost above standard, caused principally by machine allowance time, reduced the economy of operation and thus reduced the supervision point hour. If the productive workers had been able to tend more machines or to do some other job during this period of enforced idleness, the amount of machine allowance time could have been reduced, and the worker and the foreman both would have had a better chance for premiums. In this example, the actual direct cost improved as the machine allowance time was reduced. The calculations inserted in parentheses show what the effects on the department point hour, costs, and supervision premium would have been had machine allowance time been completely eliminated. The entire elimination of machine allowance time was not immedi-

[15] See Exhibit A.

[16] Machine allowance time represents the time in which the man waits for the machine to work without effort on his part.

ately possible in this case on account of plant layout. Since plant layout was not the fault of the foreman, the management assumed the responsibility for the situation and actually paid premiums on the basis of the inserted figures. Even in this case, analysis of operating conditions from week to week resulted in reduced costs. The elimination of idle machine time offers a large field for the constructive imagination of workers and foremen. This concomitant of the point system has led to substantial savings in numerous factories.

Adequate control of the time of the indirect workers, so that the standard indirect cost might be realized, was the most difficult problem of the foremen. In respect to this item one heard the complaints of the foremen that the plan was too complicated, and foreman training was required on this point before substantial savings were realized. A striking but not unusual example of what can be done with indirect cost control is shown in detail in Exhibit A. Department X of this exhibit represents an actual department, and the figures shown are those taken from a company's record which cover the operations of the department from the first week in which the point system was used to the close of the field investigation in this department. This department was chosen for illustration in this article because it was one in which improved conditions were realized slowly but steadily. The results of this department were the least Although standard results have not been favorable of any examined in detail. completely attained, total labor costs have been halved in 10 months' time. Actual indirect costs at the outset in this department were $1.09 per 100 points, and within 10 months they had been reduced to 32 cents per 100 points as against the standard of 30 cents. A more favorable example could have been secured easily; this one seemed to be a convincing illustration of the real merits of the point system in a difficult situation.

The factory superintendent has in the supervision point hour a summary measure of his foremen. When conditions are not what he expects, he can turn to the detailed analysis of the analysis sheet to discover the source of weakness. Expert service or educational methods may then be used to aid the foreman in applying corrective measures.

The Point as a Planning Unit

The point standards of a job are often useful to the planning department of the factory. Ordinarily, a schedule answers the questions of how long it will take to do a certain operation on a piece, how much work is ahead of a machine, and when the machine will be free for another job. Time is the element on which all these plans are based. Any attempt to use the point as a planning unit must take into acount the fact that the point is not a fixed unit of time, but rather a unit of effort, the rate of expenditure of which varies with the point hour of the operator. In a plant where the point system is firmly established and where the point hour of the laborers of each department is approximately the same from week to week, however, the point takes on the aspect of a time unit which can be used for planning and scheduling.[17]

The scheduling of work to machines may be considerably complicated by machine allowance time. It is possible, nevertheless, by converting points into

[17] In a department with a point hour of 60, the "point" and the minute represent the same time period; where the point hour is 80, the point is equivalent to three-fourths of a minute of time.

minutes, to secure a common unit for machine time and productive effort, the total of which may be used in preparing schedules.

Even with its limitations, the point as a planning unit is superior to any generally found in either a piece or a day wage plant. In a piece rate plant no information is readily at hand as to the time required to do a job. A piece rate factory has no unit comparable to the point hour with which to turn the standard into a time unit. It is, of course, possible in both of the latter cases to keep operating statistics which will furnish these data, but they are not usually so easily obtained as under the point system.

Labor requirements in hours can be estimated by dividing the points of work scheduled for production by the point hour of the department concerned. These same scheduled points multiplied by the actual cost per point show the probable labor cost of the product, information which may be useful for the financial operating budget. The estimating department may approach the problem of the cost of a prospective order by laying out an operation sheet with the point standards of each operation indicated. By applying the actual costs, taken from the analysis sheets of the various departments, to these schedules points for the job, the total labor cost may be quickly estimated.

A Method of Preventing Material Waste

One criticism of the point system made in the study was that all the emphasis was placed on labor problems and labor costs. It was suggested that the principles of foreman responsibility and reward by premium for more than standard performance could be extended to material costs and any burden expenses subject to the foreman's control. It was thought that the economy factor might be made a weighted average of material and labor actual costs as compared to standard costs, rather than simple labor costs as at present. This step would affect only the foreman's premium calculation. It would place a measurable responsibility for materials upon him.[18]

The reader should not conclude from this proposal that the point system entirely neglects material problems. In fact, careful inspection standards are set where necessary, and all operation standards state in writing the quality of the work to be done. This quality statement is a basic factor, moreover, in the time study. Yet the possibility of the waste of materials remains, and the proposal, if adopted, would offset that tendency, because the foreman would watch material usage in order to avoid waste and to meet standard material quantities. If a direct worker spoils material, his premium points earned may be reduced by a deduction for points spoiled. He too has an incentive to do good work.

Cost and accounting aspects of the point system have been discussed throughout the article where necessary. Sources of savings in plants using the plan have been indicated. That these savings have been substantial and that that they have been maintained cannot be doubted. The range of net savings over previous total labor costs is from 10% to 25%, the average being over 15%. These savings are secured principally as a result of the setting of more accurate standards, continual control of labor expense, and the incentive which

[18] Since the survey was completed, it has been learned that some plants have taken steps on their own initiative in the direction outlined.

keeps the men constantly utilizing their time to the best advantage. Some of the leading companies of the country point with pride to the savings already secured by investment in these careful standards.

Limitations to Use of the Plan

There are limitations to the adoption of the plan, however. First, there must be good management, at least at the top, which can lead and inspire those beneath. The point system is no cure-all; it is a body of principles that require intelligent use. If one seeks a panacea for industrial ills and is unwilling that it should require effort on his part, he should leave the point system alone.

The second limitation to the use of the system seems to be the cost of time studies. If a company does not have a large volume of business to absorb the engineering costs involved, it may find it more economical to try a less effective method. Again, the cost is likely to be too high for a company with many unlike operations and thousands of standards to be set, even if the total volume of business appears to be adequate. Yet it is surprising what can be done economically and accurately in the way of time studies. The current cost of operation of the system is not excessive, and is no more than for any incentive plan of wage payment.

In plants in which the speed of production can be adequately controlled by the speed at which the conveyor system of the assembly line is regulated, an incentive wage system and engineering standards for work may not be required.

Perhaps the most striking feature of the system from a general point of view is its flexibility. A representative of a large company stated that "the system is so broad in meaning and the application can be so differently applied" that a resumé of his complete experience would be too long to embark upon. This flexibility is a source of strength. Instead of a plan that is forced upon a management without a change, point system principles are offered a management as tools to be developed and applied as the needs of the particular case and men require.

Summary

There has been no attempt in this article to compare the point system with other wage payment plans or control devices. Rather, the scope of the article has been limited to a summary of what the system really is, and to a statement of what its advantages and limitations were found to be in practice. The system has been spreading so rapidly in recent years that an appraisal of its results and possibilities seemed desirable for the business community.

Critical study of the plan in operation has led to the conviction that the point system as a body of principles is an effective instrument of industrial control.

CASE STUDIES IN BUSINESS

MANUFACTURING VERSUS PURCHASING

THE operating executives of manufacturing concerns are constantly challenged by problems necessitating a decision as to the extent to which they themselves can profitably produce the materials and parts needed in the operation of their business. In other words, how far are the economies of vertical organization applicable to the industries concerned?

In many instances the answer is simple and determined without conscious evaluation of the many factors concerned. Oil, for example, is frequently an indispensable adjunct of many businesses, but few concerns would consider for a moment the advisability of producing it themselves. A different aspect of the same principle is evident in the relation of pig iron to the United States Steel Corporation, where not the slightest question exists as to the economies secured by the development of company furnaces. On the other hand, there is a vast middle ground where the proper policy to pursue is not so obvious, and yet where an error of judgment may mean financial loss and perhaps vitally affect the future prosperity of the company. It is the purpose of the following discussion to indicate certain of the more important factors that are likely to bear on problems of this nature, and to illustrate their application through the medium of cases drawn from actual business experience.

Stability of Demand

Since the relative merits of any plan of procedure will be greatly influenced by the quantity of material to be consumed, the first step in the analysis should include a careful evaluation of the factors underlying the *present* or *potential* demand.

Consider, for example, the case of newly organized industries, particularly those which are to produce a product unfamiliar to the potential purchasers. Of necessity, because the development of such enterprises is fraught with uncertainty, a conservative policy would keep the investment in as liquid form as possible pending the fundamental test of time. Viewed from this angle, therefore, the objective of the production executive should be the paring down of the fixed property accounts to a minimum by contracting for the use of equipment in other plants, thus reducing the risks of development.

In other cases, the business may be old in the field and experiencing such an increased demand for its products that the acceptance of all orders will necessitate either an increase in the fixed investment or a resort to outside purchasing. This same growth in demand is likely to raise the further question whether or not it would prove more profitable to undertake the manufacture of certain parts or materials now obtained from outside sources. In both cases the answer will depend primarily upon the *permanency* of the present market, as to both price and quantity.

The stimulation incident to extreme economic conditions is almost certain to be of a temporary nature, and hence expansion during these periods is likely to result in heavy financial losses. Ordi-

narily the soundest plan would meet the unexpected or recurring peak loads by outside purchase, wherever possible, through shifting the risk to the vendor. It is possible, however, that the latter organizations are likewise under pressure from abnormal demand and, as a result, will be in no position to furnish satisfactory service. In such a situation, it is altogether probable that the long-run interest will be served best by limiting the orders taken to the capacity of the existing equipment. On the other hand, if the demand is evidently the result of a normal growth and gives promise of being maintained or increased in volume, then it is well to consider carefully the possible economies of independent manufacture.

In arriving at estimates of future demand, one of the more important considerations deals with the stability of the product itself. Where the industry is in a state of flux, as recently exemplified by the radio business, the successful concern must be in a position to exploit the newest developments without delay. Under such conditions, the organization which is extensively equipped to produce the old product is under a distinct handicap as compared with the business in a more flexible condition. The same general rule holds true in cases where the product is obviously of a temporary nature, catering perhaps to the immediate whims of a fad-loving public. On the other hand, these very conditions of uncertainty may militate against the expediency of outside purchase. Where the developments involved are not such as to require serious alteration in the producing equipment, but rather concern operation changes, greater flexibility may often be obtained, at a smaller expenditure of both time and money, by independent manufacture.

In general, however, investments in producing equipment should be made cautiously, and only after investigation has given reasonable assurance that the demands will be of sufficient volume and duration to allow the amortization of such equipment out of earnings.

Relative Costs

Earnings are, of course, fundamentally dependent on costs, and hence the second phase of the analysis should deal with an evaluation of the relative costs involved. The development of the so-called hand-to-mouth buying in recent years has tended toward the utilization of smaller but more frequent orders than would be considered economical for independent shop production. Therefore, to make the data comparable, it is essential that the calculation for both purchasing and manufacturing be based on the same size of lot.

In the case of outside purchases, the costs are relatively easy to determine; as a rule, they consist of the net billed price plus transportation or storage expenses, the latter including interest charges on the capital invested in inventories.

The expenses incurred through manufacture, on the other hand, are often more difficult to ascertain. As a rule, they are grouped under the captions "direct" and "indirect." The direct costs are those expenditures which are directly attributable to the products in question—consisting of such items as raw material, labor, and transportation. In the case of certain technical products, an additional expense would be incurred because of the necessity of maintaining adequate research and development departments with their staffs of highly paid technicians. This expense alone is often of sufficient importance to forbid independent manufacture. The determina-

tion of the indirect charges is rendered difficult by the problems of joint costs and by the variety of methods by which such expenses are distributed. It would seem, however, that for the present purpose *increment* costs should be employed —that is, the extent to which the total overhead charges are increased by the inclusion of the desired articles in the production programs. It would be clearly inaccurate to include the item of superintendence, for example, if the outgo for that element was in no way altered by the proposed policy. It is, then, the net effect which is desired.

In this connection, it is important to bear in mind the matter of depreciation or amortization charges. Where additional equipment is to be required, a special rate should be computed, based not only upon the mechanical life of the machine, but also upon the previously estimated period of demand for the product which it is to produce. The so-called blanket rates found in many establishments should be discarded for the purpose at hand as likely to inject error into the analysis.

The results derived from comparisons made as outlined above will vary according to the particular conditions involved, but, as a general rule, the smaller the quantity of material consumed, the more probable it will be that outside purchasing will allow the buyer to derive some of the benefits of another's large-scale production. The consideration of relative unit costs alone, however, is not conclusive evidence of the ultimate economy of either policy.

Relative Quality

Up to this point, it has been assumed that the requirements of quality could be equally well met whether the decision favored purchasing or manufacture. In actual practice, however, such is frequently not the case.

It may happen that the quality factors are of such importance as to make satisfactory purchasing impossible, or fraught with heavy risk. In such instances the potential damage to the company's reputation in the case of failure to obtain material of satisfactory quality may warrant the development of an independent organization for production, in order that control of quality may be maintained. If the unit costs are consequently higher than the market rates for similar products, the difference must be considered as a form of insurance premium.

On the other hand, the existence of a fundamental patent or other source of monopoly control may handicap independent production of any but inferior or inadequate products. Such control is sometimes obtained through secret processes or through an exceptional corps of highly skilled men—mediums which cannot be duplicated without great expenditure of time and money.

The favorable characteristics of a product, however, are of little value to the industrial consumer until delivered into his control; hence, the analysis of quality and security should be extended to include the sources of supply.

Stability of Sources of Supply

When the volume of external purchases amounts, or would amount, to a considerable portion of the supplier's total output, it is frequently possible to maintain the service desired through representation on the board of directors. In the majority of cases, however, such an arrangement would not be possible.

The prompt and continuous receipt of materials will depend to a large extent upon the existence of sound business

health in the supplying company; hence, such points as market stability and financial strength should be investigated. Other factors of importance deal with the relative accessibility of the plants, especially in connection with the problems represented by the possibility of transportation tie-ups or delays. Any situation which would require the maintenance of large reserve stocks for emergency purposes would diminish the apparent advantage of outside purchase.

The existence of a number of potential sources of supply would add an element of greater security, since in case of difficulty the production program would not be dependent upon a single source. A competitive situation always helps to prevent the possibility of future squeezing operations both as to price and service.

Advertising and Sales Considerations

An entirely different aspect of the question of purchasing versus manufacturing is found in the possible promotional advantages to be secured by the utilization of a well-known product. Modern advertising appeals frequently stress the fact that this particular machine contains roller bearings of a certain well-known brand, or that this automobile has a body made by this or that company. The idea in each instance is the capitalization of the good will supposed to have accrued to the other concern. The effectiveness of such endeavors will depend to a great extent upon the importance of the article in the finished product and upon the buying motives which actuate the ultimate consumer. If the identity of the part in question is submerged in the unit as a whole and if the fundamental appeal is in general appearance or performance, the actual value of the trade name of any particular part is open to serious question. On the other hand, if the sales of a product are appreciably stimulated by the incorporation of a purchased unit which is favorably known, the question may well be raised how far it is wise to develop good will upon the reputation of products outside the control of the manufacturer. In general, therefore, the advertising or sales advantages should be conservatively estimated.

The points for consideration in any particular case will very likely include others than those here discussed, and the order of importance certainly will vary. Three cases have been included as presenting typical problems faced by the manufacturing executive.

Telton Motor Truck Company

The Telton Motor Truck Company, recently organized in a small city in the Middle West, was within easy distance of several large industrial centers. The capital had been raised largely from local sources. The nucleus of an administrative organization had been assembled and designs had been organized for the production of a single, standard type of truck chassis upon which varying bodies could be placed. It was the expectation of the company that there would be a production of approximately 1,000 trucks a year. The factory selling price of the chassis was to be approximately $2,000.

During the period of organization, the company officials were approached by a representative of the Lorenton Transmission Company, an organization which was devoted solely to the manufacture of truck transmissions. It was stated that this company was in control of patents which allowed it to produce a transmission unusually qualified to withstand the heavy service required of

such truck mechanisms. Manufacture of transmissions was limited to a few standard types, diversification being allowed only with respect to the outer casings and means for connecting the transmissions to the chassis, motor, or propeller shafts. Production for the past year had exceeded 25,000 transmissions, and an increase in output was anticipated during the coming year.

Furthermore, it was held that the Lorenton transmissions were now in use upon several successful makes of trucks, and this fact, coupled with the reputation which these transmissions had gained for themselves among truck operators, carried valuable advertising features in the sale of the Telton Motor Truck Company's product. If the Telton Company should purchase these transmissions, it would not be required to invest heavily in fixed assets in the form of buildings or machinery for the manufacture of transmissions. Inventories of raw materials and stock in process or finished assemblies could also be maintained at a lower level. Transmissions could be purchased on a three months' commitment basis. The Lorenton Transmission Company was located in a nearby town, and transmissions could be delivered by truck. That company maintained an ample stock of service parts at its factory, and the Telton Company, therefore, would require only a small skeleton stock which could be replenished conveniently by truck deliveries.

The Lorenton Transmission Company was spending considerable sums annually in engineering research directed toward the constant improvement of their product. The present designs had been thoroughly tested through practical use and were known to be adequate. Furthermore, the Lorenton Company had gradually assembled a force of employees who were unusually skilled in manufacturing operations, such as gear cutting and grinding. The quality of their work would be difficult to duplicate. The designing engineer reported that the transmission could be suitably introduced into the present truck design without loss in the mechanical balance of operating parts.

The representative of the Lorenton Transmission Company was asked why the excellence of the product did not make it possible to sell the entire output to some large truck manufacturer. He answered that the policy of the Lorenton Transmission Company had been to distribute the sales of its product so that no one company would control its output. Thus the market risk was reduced.

Commentary

The problem of the Telton Motor Truck Company is typical of the new organization entering a highly competitive field in a comparatively small way. The past history of the automobile business has been characterized by a continuous decrease in the number of concerns in the field, together with a compensating increase in the size of the remaining corporations. As a consequence, the Telton Company must develop a market in competition with mass production, extensive service organizations, and virtually unlimited capital—advantages which are not enjoyed by the new concern. Since success against such odds is at best uncertain, the investment should be kept as liquid as possible until time has proved the wisdom of the venture.

The estimated production of 1,000 trucks a year would call for but three or four transmissions a day; hence, it is altogether probable that the costs of independent manufacture would greatly

exceed those incurred by the purchase of the Lorenton product. The decision, however, is a matter of increment costs and will depend upon whether or not other units to be made, if any, require the skill and equipment necessary to make transmissions. If such are available, it may very well be that production of transmissions could be carried on with but very little increase in either the fixed or operating costs.

The readily accessible location of the Lorenton Transmission Company would practically eliminate the danger of tie-ups occasioned by transportation delays and hence would materially reduce the size of the reserve inventories. Likewise, the ability to utilize the standard product without special changes operates to cut down the ordering periods and therefore the reserve requirements. The fact that the Lorenton Company appears to be free from the domination of any one concern aids in placing the Telton Company on a reasonably equitable basis as regards service.

Furthermore, since the transmission is an important part of the truck, it is important that all failures be reduced to a minimum. Since the Lorenton unit has proved dependable in actual service, as contrasted with the paper condition of the Telton product, it might be advantageous to use the former until the latter had been thoroughly tried out in an experimental chassis. By this means it might be possible to place the truck on the market sooner than would be otherwise possible.

The advertising benefits suggested in the case are probably more fancied than real and should not influence the decision. It is doubtful whether the potential truck customer cares who made the transmission, provided the car as a whole meets with his requirements. Furthermore, the good will to be developed should accrue to the Telton Company and should not rest on the exploitation of outside products which are beyond its control.

It is true that the use of the purchased unit subjects the company to constant risk through the failure of the supplier to maintain quality. This is an important consideration, since it is impossible for the Telton Company to test effectually the completed unit, but in view of the demonstrated quality of the units now in service and the obvious importance of maintaining their reputation, the practical risks involved are probably not great.

By far the most important factor in the whole situation, however, is the need for avoiding unnecessary plant investment until the success of the venture is assured. Since the other considerations involved offer no serious objection to outside purchase, the expedient policy for the Telton Company would seem to call for the use of Lorenton transmissions.

Atlantis River Foundry Company

The Atlantis River Foundry Company specialized in the production of textile machinery, the value of which averaged between $3,000,000 and $4,000,000 annually. The factory was located in a city where there were not sufficient foundries to fill the company's requirements for castings. As a result, a portion of the castings had to be purchased from foundries in other cities. It was difficult in periods of business prosperity to secure prompt deliveries, because the foundries often were fully occupied in filling orders for other companies and because of the delays incident to shipments made from other cities. One policy of the managers was that the company should be operated as nearly as

possible as a complete unit. It was proposed, therefore, that additional investment should be made to provide a foundry adjacent to the existing factory.

An analysis of the cost of machines manufactured showed that normally iron castings represented nearly one-fifth of the complete cost of each machine. The relative proportions of factory costs are shown by the following table:

COST FACTORS

Castings from foundries	18%
Labor	15
Stores	10
Worked materials	16
Finishing processes	3
Factory expense	38
Total factory cost of output	100

From this table it appears that the value of castings used in assembling the machines exceeded slightly the value of parts which the company manufactured. In order to insure steady production and to eliminate delays in factory schedules, it was necessary for the company to purchase sufficiently large stocks of castings to avoid the risk of shortage during periods of prosperity. This involved the investment in castings of more working capital than the company deemed justifiable. Furthermore, the quality of castings delivered by outside foundries was not always in accordance with the company's specifications and, although such castings often were used, changes were necessary in the methods of processing them. When the castings were harder than specified, tools used to machine them required more frequent repairs and renewals.

It was estimated that an investment of $250,000 would be required to construct and equip a foundry adequate to handle the company's orders for castings. The company had been managed conservatively from its inception and was able to finance the proposed foundry without stress and without issuing additional securities. It was found, however, that a foundry of the size contemplated could not be operated economically if it were to produce only the castings used by the company, because they were almost entirely of small size and of specifications calling for expensive molding processes. If constructed, therefore, it would be necessary for the foundry to obtain sufficient orders for heavy iron castings from nearby manufacturers to make possible a uniform and economical production. It was expected that orders from outside companies could be obtained readily and without additional sales expense, in volume large enough to allow the foundry to pay all fixed and operating charges. In that case, casting required by the Atlantis River Foundry Company would be billed to it at approximately cost figures, and a profit would be realized on work done for outside companies.

Commentary

According to the problem, the difficulties experienced by the Atlantis River Foundry Company in getting adequate service from foundries occur only during periods of business prosperity; hence, the first step in the analysis should include a careful estimate of the character of the business, its steadiness and probable future movements. Obviously, the demand is derived from and will tend to follow the ups and downs of the textile industry. The important factor to be ascertained will be the probable proportion of the operating period during which congested conditions are likely to exist. If the period is relatively small, the wisdom of increasing the fixed investment is open to serious question, since the increased overhead burden may

more than offset the temporary betterment of service.

In this connection it is to be noted that in order to operate economically, the new foundry would be obliged to secure contracts for outside work. The success of this scheme must depend somewhat upon the relation between the excess capacity of the proposed foundry and that of the foundries in the district. A comparatively large excess might prove to be costly, in spite of the optimistic hopes of the officials. If the outside work is of the jobbing type, the volume is always uncertain and the constant change in design prevents that familiarity with the job which is conducive to low operating costs. Furthermore, the slack and rush periods for such work are very likely to correspond with those of the Atlantis Company. The certain competition from other foundries during the off peaks would only aggravate the situation. The same general situation would hold for regular contract work, and, in addition, would furnish the embarrassment to the foundry of being under obligations to supply the client when the capacity might be otherwise needed. During 1919 and 1920 another large manufacturer of textile machinery was faced with a similar problem and decided to build the foundry. Since 1921, however, this company has been endeavoring to ease the burden by undertaking a jobbing business in castings.

In general, therefore, it is unwise to make investments which can be utilized to advantage only during peak loads. If the necessary supplies cannot be secured from other producers, it would be safer to limit production to existing capacity. Frequently, however, delivery may be obtained even during rush periods, provided the purchaser is willing to pay the necessary premium.

Galbraith Company

When the engineers of the induction motors department of the Galbraith Company decided to market a new line of motors, the production department had to determine, among other questions, whether to buy or to make the conduit boxes and oil-gauge elbows. The specifications called for one conduit box and two oil-gauge elbows per motor, and the production schedule specified 500 motors a week. The boxes could be shipped separately, but the oil gauges had to be put on the motors before test.

The foundry at the main plant was equipped, and the machine tools in the motors department were designed, primarily to handle a larger type of work. It was possible, however, for both the motor department and the foundry to equip for the smaller work, but the equipment would encroach upon space which might be needed in case of expansion in the more important work. It was estimated that with the proper equipment installed and with a liberal allowance for overhead, the home foundry and the motor department on short runs could produce conduit boxes 2 to 3 cents cheaper than the quotation from an outside foundry. The costs of conduit boxes cast and machined in an outside foundry ranged from $1.35 to $1.75 apiece, according to the size of the box and the length of run possible. The oil-gauge elbows could be purchased for approximately 5 cents each.

The outside foundry under consideration was located 16 miles from the Galbraith Company and was accustomed to handling and machining this smaller line of apparatus. For the proper scheduling of the foundry machine tool equipment and the securing of long runs, the company would have to place orders for conduit boxes and oil-gauge elbows far

in advance of requirements. In case shortage developed, it would cost more to send a special chaser to this foundry for the needed parts than to send him to the home foundry or the section of the induction motors department which might be machining the castings. If the material were produced at the outside foundry, a buffer stock of four to six weeks' supply would have to be maintained, whereas a buffer of a week's supply or less should be ample for the home plant. To avoid carrying a large buffer stock when the material came from the outside foundry, a strict adherence to short-run schedules would be required of the foundry management. This would justify the outside foundry in charging a higher price for the material than it would cost the company to produce it in its own plant, and in addition it would delegate to an outside firm the control of one of the factors which determined whether motors could be shipped to customers according to promise.

Commentary

From the standpoint of relative costs, there is little to choose between the two methods, since the few cents saving per unit is of small consequence when compared with the price of the completed motor. Even the aggregate saving per week on conduit boxes amounts to but between $10 and $15, margins which might easily be swallowed by fluctuation in the operating expenses.

The parts in question are simple in design, relatively cheap, and of minor importance in the construction of the motors. There is, therefore, no objection to outside purchase from the standpoint of quality control. Furthermore, with the aid of the telephone, trucks, and an efficient scheduling department, there seems to be little reason to fear difficulties in meeting shipping requirements.

Finally, inasmuch as the needs of the heavy department are expected shortly to require the present excess capacity, it would seem better organization not to inject other types of work. If the growth is to be continuous, new capital will ultimately be required for extended capacity; then it may well be that the small parts under consideration can be effectually fitted into the production schedule. Hence, by purchasing on the outside at the present time, it may be possible to postpone the need for further investment in the plant; the charges thus saved are likely to more than offset the apparent saving.

Summary

In substance, the discussion of the preceding pages would indicate the following general principles:

A. That outside purchasing *tends* to become more advantageous when:

1. The demand is small and uncertain;
2. The part is relatively unimportant in the finished product;
3. The part is of a standardized type which may be readily secured.

B. Independent manufacture *tends* to be desirable when:

1. Demand is large and increasing;
2. The part is important and demands first-hand control.

DISTRIBUTION PROBLEMS OF A COTTON MILL

ONE of the chief problems of many manufacturers today consists in attempting to determine the ultimate answer to the question, "How can I most effectively market my product?" Some manufacturers have deliberately depended upon their ability to produce and sell at low cost. Price appeal is their answer to the question. Others have attempted to build up brand reputations for their trade-marked products, thereby lifting these products out of the field of pure price competition. In the process, however, they have encountered, among other problems, one of predatory price cutting, which has tended to associate their merchandise with cheap goods of lower quality and which has made it difficult to distribute merchandise satisfactorily through the usual wholesale channels.

The object of this article is not to attempt to solve the complex problems involved in the distribution of a branded product. It is rather to present in an analytical manner the solution reached by one company which was confronted by those problems—a solution which is novel in itself and which involves a principle of broad application.

The Company's Products and Their Distribution

The Tousley Manufacturing Company was a cotton mill manufacturing fine cotton dress goods, rayon-filled dress goods, shirtings, draperies, and other yarn-dyed fabrics. The nature of the products in 1926 was such that the company believed it could raise those products out of the class where competition was based purely on price. The company was attempting to accomplish this end by manufacturing goods of high quality, by furnishing those goods in stylish pattern and color, and by creating among consumers a demand for the product through brands and advertising.

The production of the mill was sold through a selling agent, but the intimate connection between mill and agent brought about by joint ownership of the mill property made the selling agent, in fact, the sales department of the mill. The coordination between the two was close. The selling agent also handled other non-competing textile products.

The goods manufactured by the mill were sold to two chief classes of customers: first, dry goods wholesalers, who absorbed about 65% of the mill's output and who resold their purchases to unit stores, department stores, and small manufacturers; second, larger manufacturers, or cutters-up, who absorbed the remaining 35% of the mill's output in making dresses, shirts, and upholstered furniture.

Distribution Problems Encountered

In distributing its products the company was confronted by certain problems which were inherent in the cotton industry at the time. Public favor seemed to show a trend away from yarn-dyed cotton goods toward printed cotton, silk, and rayon materials. Style changes came with disconcerting rapidity. Since the time elapsing between design of a new fabric and its production for sale was from six to eight months, this factor of rapid change made the production of style merchandise a hazardous undertaking. The customers of the company insisted on doing their buying from hand to mouth, not only because of the risk of style obsolescence accompanying large purchases, but also because of steadily

declining prices. Hand-to-mouth buying, therefore, made the establishment of satisfactory production schedules difficult.

The basic problems of declining prices and rapid style change apparently could not be affected materially by the one company acting single-handed. While the mill attempted to do its share toward bringing yarn-dyed goods back into public favor, toward shortening the time between fabric design and production, and toward stabilizing prices, these problems were industry-wide and could be solved only by industry-wide attention.

Though conditions in the industry were rapidly changing, dry goods wholesalers in general were slow to adapt themselves to the changing situation. Large department stores and buying syndicates were able to buy as large quantities as the wholesaler, or larger, and desired, of course, to obtain the savings of buying direct from the manufacturer. Many wholesalers' stocks of the Tousley Manufacturing Company's products were inadequate because of their policies of hand-to-mouth buying and fear of losses from style obsolescence. Though in many cases a wholesaler's stock was incomplete, he would object to direct selling by the mill to a department store, in spite of the fact that the store might be as large a potential customer as the wholesaler himself. Up to the time the problem arose, the mill had encouraged all customers to purchase through wholesalers, but had found it necessary to sell direct to some few buying syndicates who would have bought from the mill's competitors if refused the opportunity to buy direct.

The Tousley Manufacturing Company had difficulty in solving its problem of getting away from price competition by the use of brands, first, because large purchasers were accustomed to wield their buying power as a club to force prices down, and, second, because some wholesalers were inclined to cut prices on the products of the company. The mill's brands were well known among those who purchased from the wholesalers. In order to secure orders for merchandise less well known but carrying a higher gross margin, a few wholesalers would cut prices on the branded merchandise of the Tousley Manufacturing Company, using that merchandise as a "loss leader." The result was that the mill's brands were associated with cheap merchandise of inferior quality, and more important, wholesalers were reluctant to push the quantity sales of Tousley Manufacturing Company products on account of the low margin obtained.

The Issue

In attempting to better the situation, aside from the problems inherent in the entire cotton industry, the Tousley Manufacturing Company felt that it should consider its problem in two phases, the second dependent upon the solution of the first.

1. Should more sales be made direct to the retail trade?
2. If not, how could present distribution be made more effective?

Should More Sales Be Made Direct to the Retail Trade?

One possible solution of the distribution problem of the company was to discontinue the existing method of selling through wholesalers and to establish a selling staff which would sell direct to the retail trade—the customers who formerly bought from the wholesalers. This step had been taken by several companies who found themselves con-

fronted by the problems described above, and in some instances the measure had been successful.

The idea presented a number of significant advantages. Primarily, it offered an aggressive means for building up the sales of the company at a satisfactory gross margin. Wholesalers carrying a wide line of merchandise and several brands could not logically be expected to push a particular line or brand with any great effort. The company's own salesmen, on the other hand, would be carrying fewer lines and could therefore put more energy into the sales of those they did carry. This aggressive selling policy would help to build up the reputation of the company's brand as well as to increase the sales of the products.

If direct selling should be decided upon, goods would reach the consumer with less delay than if sold through wholesalers. This fact was of especial importance because of the style element in the company's products. Cutting down the interval between the times of production and of purchase by the consumer would result in cutting down losses from style obsolescence of merchandise. The close contact with the retail market would enable the company to sense style trends more readily and to keep its styling department in touch with current demand. In designing style products this contact would be of significant value.

Direct selling would enable the company to eliminate the cut-prices policy which some wholesalers had practiced on the company's branded goods in using those goods as "loss leaders." Prices consistent with the quality and style of the merchandise could be maintained more easily if a selling force under the control of the company itself were employed in selling to retailers. The company could not insist that wholesalers maintain prices at a level yielding a normal margin of profit if it distributed through wholesale channels.[1] The most effective means by which prices could assuredly be held to profitable levels was through direct sales.

The establishment of a sales force dealing directly with the retail trade would eliminate some of the major problems which the company faced. Large retailers, chain stores, and buying syndicates refused to buy through wholesalers. If the wholesalers were eliminated from the company's distribution scheme this difficulty would automatically disappear. It would no longer be necessary to make concessions to wholesalers who protested against the company's selling to department stores or to small and medium-sized manufacturers and cutters-up.

The company felt that it was justified in taking over the wholesaler's function because the wholesalers themselves were not performing that function satisfactorily. Instead of carrying ample stocks and a full selection of the company's line of products, most wholesalers were keeping stocks at a minimum and in many cases were without a representative selection of merchandise. Hand-to-mouth buying had shifted a large share of the burden of stock carrying to the manufacturer. To the extent to which that burden had been shirked by the wholesaler, the company felt that the existence of the wholesaler was unjustified.

The Tousley Manufacturing Company was in a position to distribute its products direct to the retail trade because the larger stores were its chief outlets. This fact simplified the problem of direct selling by narrowing down

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[1] A discussion of the problems of price maintenance and predatory price cutting may be found in an article by Melvin T. Copeland, "Standardized Resale Prices," *Harvard Business Review*, Vol. 4, No. 4, July, 1926.

the field of customers from which profitable business might be sought. The lines of the Tousley Manufacturing Company were inclusive enough to support direct selling in the more densely populated districts. The lines of the other companies which the selling agent represented would help support a direct selling force in other territories.

In contrast to the rather attractive possibilities offered by a policy of sales direct to the retail trade were the practical difficulties involved. Direct selling was expensive. Though undoubtedly it was more aggressive, the additional effort involved was obtained only with commensurate increase in expense. The company was not able to spread its selling expenses over a wide variety of lines, as were wholesalers. Direct selling involved employing and training a sales force very much larger than the existing one. These new salesmen would necessarily be of a type different from those already with the company, since the ability required was different. The company was not familiar with the problems of handling salesmen who sold direct to the retail trade. The new, large sales force would lack the flexibility of the old organization and would saddle the company with a heavy current selling cost.

Another unfamiliar and serious problem accompanying a direct selling policy was that of credit. A large and well-informed credit organization would be essential to satisfactory operation of the plan. The company could not handle the problem of granting credit to the retailer of dry goods as well as could the wholesalers. The wholesalers not only had fewer accounts with which to keep in touch, but they also had the advantage of being in the same general locality as the retailers and thus in closer touch with their affairs. Even after having built up a credit department, therefore, it would be difficult for the company to effect credit control as satisfactorily as could the wholesalers.

The large number of small retailers, scattered over a wide territory, offered a serious obstacle to successful direct selling. The lines of the company were not wide enough to sell these customers at a reasonable expense. Ill will of the wholesalers toward the company, if it started to sell direct, would prevent the company's goods from getting to these small retailers through wholesale channels. Hand-to-mouth buying would make the units of purchase small and therefore expensive to handle from the mill. Retailers in many cases were not accustomed to buying direct from the mill and might prefer the more rapid service usually obtainable from wholesalers.

Still another important consideration militated against a policy of direct sales. The unsatisfactory profits of recent periods had awakened wholesalers to the necessity of adjusting themselves to changed circumstances. There are certain functions in distribution to be performed. If the wholesaler is to exist, he must realize the necessity of performing these functions which he is usually best qualified to perform; that is, granting credit to the retailer, giving him an opportunity to select from adequate stocks, and supplying a requisite delivery service. The difficulty of the Tousley Manufacturing Company did not lie fundamentally in the channel of distribution employed, and to adopt direct selling as a solution for all the company's distribution problems would have been unsound. The distribution through existing methods was wide, and wholesalers were perhaps carrying on their business as satisfactorily as could be expected under the difficult conditions confronting them, namely, rapid style changes, and constantly declining prices.

To summarize: it was apparent that direct selling offered opportunities for more aggressive sales effort, for emphasis of the company's brand, for elimination of predatory price cutting by wholesalers, and for better contact with style trends and with the consumer's point of view. On the other hand, it brought up extremely difficult and intricate problems of building up new sales and credit organizations. Direct selling would be expensive and unsatisfactory in reaching the small retailer. The wholesalers would be lost as customers as soon as the policy became known, and it was sure to take considerable time to build up an effective direct sales force. Sales during the interval were certain to fall alarmingly. These facts, together with a realization that the wholesalers were beginning to adapt themselves to changed conditions, led the Tousley Manufacturing Company to a decision not to make more sales direct to the retail trade. The problems of the company would only be replaced by others, perhaps more serious, if existing channels of distribution were changed; hence, it was felt that the solution lay in improving existing methods, rather than in instituting new ones.

How Could Present Distribution Be Made More Effective?

Having definitely cast their lot with that of the dry goods wholesaler, the Tousley Manufacturing Company was still confronted by the problem of how to make the wholesale method of distribution more satisfactory. Numerous suggestions were made, some of which were found to be practicable. These were adopted as soon as their value was apparent. Production methods were studied in an attempt to shorten the manufacturing process. This was desirable in order to lessen the likelihood of style obsolescence. Special attention was directed toward the forecasting and design of styles, so that fabrics would be manufactured only in designs which were most likely to be profitable.

These measures, however, did not affect one of the company's major problems—severe cutting of prices on its branded products by certain wholesalers. Because of the decision to continue distribution through the existing wholesalers, it was necessary to devise a sales plan that would protect them from losses due to price cutting tactics. The company decided to distribute its fabrics on a consignment basis, title to the goods to be retained by the mill until sold by the wholesaler. These fabrics were sold in both staple and fancy patterns, the range of fancy patterns being completely changed twice a year to conform with changes in fashions from spring to fall and from fall back to spring. The fabrics had long been nationally advertised to the consumer, and the name had long been associated with high quality.

The operation of the new plan of selling involved the appointment of the wholesaler as the agent of the mill. The contract between the two stipulated that the wholesaler should sell goods consigned to him at a certain price from which he was allowed to deduct a certain percentage as his commission. The price and commission were uniform for all wholesalers who became agents of the mill, and no cloth was consigned to any wholesaler who did not sign a contract. The commission was paid in two parts. The contract provided that the agent should advance to the mill payment for the goods within the maturity date of the consignment invoice. The same terms were granted by the mill as were granted in the case of goods sold outright. The amount of the

agent's advance was the gross amount of the bill at the contract price per yard less the first portion of the agent's commission. The second portion of the agent's commission was payable twice a year and was dependent solely on the quantity of goods sold. The contract provided that the agent would not be entitled to the second portion of the commission unless he sold during the life of the contract, one year, 90% of the goods invoiced to him. In return, the mill, as owners of the goods, assumed all the risk of depreciation in the value of stock in the agent's hands, so that the agents were given practical stock protection. The total commissions were adequate to take care of the agent's expenses of selling and to give him a profit in addition.

Consignment selling, not necessarily in the precise form described above, was familiar to manufacturers in some other lines of business, but was new to the textile industry. The plan in the case of textiles undoubtedly had drawbacks which might limit its practicability. In order to carry out the agency intent of the contract, it was necessary for the company to accept a certain amount of returned merchandise. This necessity placed upon the manufacturer a risk of style obsolescence which had formerly been carried by the wholesaler. The latter, knowing that he could return merchandise, might be inclined to overorder. This inclination was partially overcome by the undesirably large amounts of money tied up as advances to the manufacturer when stocks larger than necessary were carried. It was still further mitigated by the fact that the company took the point of view that the merchandise was the company's and that it could send the wholesaler only such quantities as it felt was advisable, if such steps ever appeared to be necessary.

In order to plan its price policies, it was essential that the company know the stocks on hand at the wholesaler's warehouses. This required that the company persuade its customers to send in monthly reports showing their inventories of the Tousley Manufacturing Company's products. The difficulty of obtaining this information was an obstacle to the plan.

The profit which a wholesaler could make on the company's goods was definitely set. On a falling market the company absorbed all inventory losses incidental to decreasing prices. This was, of course, desirable from the wholesaler's point of view. On the other hand, it would be impossible for the wholesaler to stock up in a rising market and take any added profit which might arise from increasing prices. It is obvious, then, that the effect of the plan was to shift from the wholesaler to the manufacturer the losses and gains caused by fluctuating prices.

Consignment selling offered a real solution to the problem of price cutting with which the company was confronted. One of the essential characteristics of the plan was the setting of prices by the Tousley Manufacturing Company. Such a procedure made possible a greater emphasis on quality with a correspondingly decreased emphasis on price. The company could proceed with its plans of building up a brand reputation for its goods, basing that reputation on quality and style appeals.

The company felt that the problems of overordering and of inventory control could be solved by intelligent attack. Many wholesalers had not been as careful as they might have been in choosing and maintaining their inventories of the company's lines. As a consequence, their losses from style obsolescence were likely to be large. With its knowledge of in-

dustry-wide conditions the company believed that it could be of real assistance to the wholesalers in planning stocks. Consignment selling placed the company in a position where it could measure the extent and trend of the retail trade demand and get the benefit of close contact with the retail trade without the expenses of a direct selling force.

The temptation of the wholesaler to use the branded products of the Tousley Manufacturing Company as price leaders was fairly definitely removed by sales through consignment, principally because those products were no longer in his low-margin class of goods. There was a remote possibility that the wholesaler might try to use the subterfuge of sacrificing his commission to customers in order to continue to make price leaders of the company's goods. This possibility was based on the fact that if the Tousley Manufacturing Company's goods were really effective price leaders, the wholesaler would still desire to use them as such in order to push the sales of his other goods. However, there were two factors which made it improbable that any such practice would develop—first, the sacrifice of the 5% commission would not allow the prices of the goods to be reduced enough to make them attractive as price leaders; and second, the wholesaler ran the serious risk of having future consignments refused him if the Tousley Manufacturing Company found out that he was reducing prices below the established resale prices by such a subterfuge. It may be said with reasonable certainty, therefore, that the practice of selling on consignment would secure the cooperation of the wholesaler in pushing the goods on a selling appeal of quality, not price.

To summarize, it is apparent that consignment sales presented the primary disadvantages of shifting the style obsolescence losses and the risk of price fluctuations from the wholesaler to the Tousley Manufacturing Company. It would be difficult to get prompt and adequate information upon which to base prices. On the other hand, consignment selling offered the advantages of maintained prices for the company's products, greater stress on quality, and less emphasis on price. The company would be able to carry out a policy of lifting its merchandise out of the level of purely price competition. This attempt, which had been largely nullified by the use of the company's products as "loss leaders," could be renewed with new vigor.

Because consignment selling offered a way out of the undesirable situation in which the company found itself and because the advantages to be gained by adoption of the plan seemed to outweigh the disadvantages which might accrue, the Tousley Manufacturing Company decided to sell on consignment to wholesalers.

Conclusion

There is to be observed here the drastic measures which an enterprise may feel itself forced to apply to its system of distribution when confronted by a problem of industry-wide depression. The Tousley Manufacturing Company first reviewed the distribution policies to which it was committed in order to determine their economic justification. Having convinced itself that those policies were fundamentally sound, it proceeded to take what steps it could to improve them. The plan adopted has not yet been subjected to the test of a seller's market; hence its permanence is not assured. Meanwhile, the company is steadily driving toward its objective of a brand reputation for its product, based on quality and style, not price.

LEGAL DEVELOPMENTS SIGNIFICANT IN BUSINESS

THE TYSON CASE

BUSINESS men have often raised the question of just how far governmental price fixing can be carried. The recent decision of the Supreme Court in the case of Tyson and Brother (United Ticket Office, Incorporated)[1] probably represents a halt in governmental price fixing, at least for businesses not wholly within the concept of public utilities.

Tyson and Brother, doing business as the United Ticket Office, Incorporated, was engaged in the reselling of tickets of admission to theaters and places of amusement in the city of New York. The United Ticket Office employed a number of salesmen, messengers, and others, and sold approximately 300,000 tickets a year. These tickets were obtained either from the box offices of the theaters or from other brokers and distributors. The company was licensed under the New York laws and had given bond in the sum of $1,000 with the surety, among other things, that it would not be guilty of any fraud or extortion.

There were, in addition to Tyson and Brother, several other tickets brokers buying and selling tickets of admission to the 60 principal theaters in New York City. Aggregate sales of all brokers averaged about 2,000,000 tickets a year. It was the practice of these brokers to subscribe in advance of the production of the play, and sometimes before the cast was chosen, to tickets covering a period of eight weeks. The subscriptions had to be paid for about two weeks in advance, and about 25% of unsold tickets might be returned. A virtual monopoly of the best seats, usually the first 15 rows, was thus acquired, and the brokers were enabled to demand extortionate prices of theatergoers. Producers and theater proprietors were eager to make these advance sales, as they offered insurance against loss arising from unsuccessful productions. The brokers were in a position to prevent the direct purchase of tickets for desirable seats and to exact from the patrons of successful productions a price sufficient to pay the loss of those that were not successful, plus a handsome profit for handling.

It is argued by some persons that the marketing system used by some agencies is a particularly effective one in securing the last possible dollar from the public. The sales structure is so organized that a graduated scale of prices is set up. The liberal spender receives first attention and is charged the highest price. If demand from this class appears to be limited, the broker reduces prices to increase sales. If he still has tickets on hand at the last minute, they may be turned over to another agency, which makes a business of disposing of tickets on short notice. The man who "knows the ropes" may buy a $3 ticket just at show time for $1.50 or less. It is possible that three theater patrons in adjoining seats may find that one paid $1.50 for his ticket, another $4, and the third $10.

The delicate and quick balancing of the forces of supply, demand, and price,

[1] 47 S. Ct. 426.

and the visible weighing of these forces has created a feeling in some quarters that the theater patron is being unfairly treated. This portion of the public and those who are interested in this group reason that the public is being gouged and is resentful because of its present helpless condition. A considerable percentage of the theater patrons are visitors to the city. Such persons cannot make reservations ahead, even were it possible to buy good seats through the box office. The desire to see a show is often the determining factor in the decision to visit New York. The lure of the theater, bringing transients to the city, helps not only the theater but also the hotels, the restaurants, the taxicabs, the stores, and other businesses. The visitor, often a stranger and unfamiliar with the city, receives what he considers a "proper trimming" by the scalpers. He has previously made up his mind to see a show, so pays the exorbitant price demanded, but leaves the city resentful of the treatment he has received. He may realize that the broker performs a service but, because of the monopoly of tickets for a particular performance, he feels that he has paid more than the service is worth and has been compelled to pay for this service whether or not he desired it.

In an attempt to correct these abuses, the New York State Legislature passed a statute declaring that the price charged for admission to theaters was subject to state regulation. Section 167, Chapter 590, of the act declared that the price of, or charge for, admission to theaters and other places of amusement was a matter affected with a public interest and was subject to the supervision of the state for the purpose of safeguarding the public against fraud, extortion, exorbitant rates, and similar abuses.

Section 172 of the act forbade the resale of any ticket at a price in excess of 50 cents in advance of the price printed on the face of the ticket, which printing was required by that section.

Tyson and Brother thereupon brought suit against the District Attorney and State Controller to enjoin them from proceeding to enforce Section 172 of the act and from revoking the firm's license or enforcing the penalty of the bond, or in any way interfering with the resale of tickets at a price in excess of 50 cents in advance of the printed price. The case was heard by a statutory court of three judges, who rendered the decree, denying Tyson and Brother's request for a temporary injunction and holding that the statute was valid and constitutional. From this decree Tyson and Brother took appeal to the Supreme Court of the United States. The Supreme Court, by a five to four decision, reversed the decree of the district court and found the section regulating the price at which a theater ticket might be resold to be unconstitutional.

Although strictly speaking, the issue related to the maximum addition to the price at which theater tickets might be resold, the court interpreted the issue in a broader way. "Since the ticket broker is a mere appendage of the theater, and so forth, and the price of, or charge for, admission is the essential element," it resolves itself into the question "whether every public exhibition to which an admission charge is made is clothed with a public interest so as to authorize a lawmaking body to fix the maximum amount of charge which its patrons may be required to pay."

As an introduction, the court pointed out certain pertinent considerations.

First, "the right of the owner to fix a price at which his property shall be sold or used is an inherent attribute of the property itself" and "as such, within

the protection of the due process of law clauses of the fifth and the fourteenth amendments."

Second, "the authority to regulate the conduct of a business or to require a license comes from a branch of the police power, which may be quite distinct from the power to fix prices. The latter exists only where the business or property has become 'affected with public interest.' This generalization cannot be exactly defined—it can only be approximated."

Third, the size of a business or a feeling of concern on the part of the public in respect to its maintenance does not determine a public interest.

Fourth, the term quasi-public (not strictly private) may be the basis for use of police power, but cannot be confused with "affected with a public interest," which is the basis of legislative price regulation.

Fifth, and finally, the statement of a state legislature that a certain business is clothed with a public interest is not of itself conclusive.

The court divided businesses which are "affected with a public interest" into three classes. They are:

1. Those businesses which are carried on under a public grant or franchise;
2. Those businesses which are so recognized by long custom;
3. Those businesses which have come to hold such a peculiar relation to the public that they have become vested with public interest.

The court classed the case of *Munn* v. *Illinois*[2] in the second group and commented that to say a property becomes vested with a public interest when used in a manner to become of public consequence would include all large and some small industries. This case dealt with legislation for fixing the prices charged by grain warehouses in Illinois.

The court pointed out that the case of *German Alliance Insurance Company* v. *Kansas*[3] carried the doctrine further and marks the extreme limit to which the Supreme Court thus far has gone in sustaining price fixing legislation. Further, it stated that there were certain conditions peculiar to the insurance business that created the public interest.

In reviewing the case of *Wilson* v. *New*[4] (Adamson Law—wages and working conditions of railroad employees), *Block* v. *Hirsh*[5] (renting cases), and kindred cases, the court stressed the emergency and temporary character of this legislation. The court stated: "There is no legislative power to fix the prices of provisions or clothing or the rental charges for houses or apartments in the absence of some controlling emergency." Further, if the price of theater tickets may be regulated, "it is hard to see where the limit of power in respect of price fixing is to be drawn."

The importance of this decision as it affects the sale of theater tickets is secondary to its importance as an indicator of the trend of government regulation of prices in business. The swing of government price regulation from railway, telephone, and electric rates to include wages paid railway employees, rents, and a more complete control of business, appears to have received a definite setback. The old order of competition is to continue, and the significance of its continuance for business becomes apparent if we consider the clamor for price regulation that would have developed had the decision been otherwise. If the sale of theater tickets is vested with a public interest, is not

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[2] 94 U.S. 113.
[3] 233 U.S. 389, 34 S. Ct. 612.
[4] 243 U.S. 332, 37 S. Ct. 298.
[5] 256 U.S. 135, 41 S. Ct. 458.

the sale of bread, clothing, or, for that matter, what-not, also vested with a public interest, and would they not become subjects for price regulation? In view of the recent trend of such legislation, the five to four decision is indicative of the narrowness of the escape. Although the margin in this decision was small, the court definitely stated its position; and if we are to judge by the past, this decision will rule for a considerable period.

Has the court been feeling its way in this matter of price regulation, tacitly approving or overlooking various experiments? The child continually experiments to see how much he can get away with, and the fond parent gives ground here and there until, finally, a halt must be called. In calling a halt, however, the parent not only limits further encroachments but is likely to retract, to take away, liberties previously granted. The court is apparently of the opinion that price regulation has been carried far enough, probably too far, and is fearful of the consequences should this last step be approved. "If it be within the legislative authority of government to fix prices for admission to theaters . . . . it is hard to see where the limit . . . . is to be drawn."

The court has carefully explained some of its more recent decisions on questions of price regulation as emergency measures. Has the court only called a stop to the growth of price regulation, or has it also set up a framework from which to reconsider some of the more far-reaching price legislation, already passed on, in classifying it as emergency legislation? Or, in recognizing that the propriety of regulating for one purpose does not involve the propriety of regulating for another, is the court leaving an open door for further price regulation in very special cases?

If this decision puts an end to price fixing legislation for ordinary business, how will this type of business be affected? Will the removal of a possible fear of legislation be a stabilizing influence, or will the thought of price freedom foster speculative activities in this type of business, dealing with the necessities of life?

Is financing more costly for an unregulated industry? Will the removal of the fear of regulation and the thought of prices limited only by competition or what the traffic will bear attract the speculative investor? Or will the cautious investor who places safety of principal first—the widow, the trustee, the ultraconservative investor—fearing the unrestrained effects of competition, be inclined to invest elsewhere?

If competition is to be the order of the day, what means can be taken to control it? Must the Sherman Antitrust Law be interpreted more strictly?

The coal, the oil, and the lumber industries are suffering from the ill effects of unregulated competition. The hope has been expressed that the solution of the problems of these industries lies in a more liberal interpretation of the Sherman Antitrust Law to allow mergers and consolidations aiming at more efficient operations in the industry. Is such a course now improbable?

This decision of the Supreme Court of the United States more narrowly defines the legal concept of a public utility or a business "affected with a public interest." We now class as public utilities those businesses operating under a public franchise, such as the telephone or the street car company; those businesses long regarded as vested with the public interest through custom, such as inns, cabs, and grist mills; those businesses which, though not originally such, have become vested with the public in-

terest. This third, somewhat flexible class has been limited by considering housing legislation as emergency legislation and by definitely stating that provisions and clothing are not vested with public interest and hence are not subject to price fixing legislation, except in case of an emergency. Does this not definitely place the farm products price legislation, such as the McNary-Haugen bill, and the regulation of gasoline prices such as is found in Tennessee, outside the concept of public utility?

The Tyson case probably will be important and far reaching in its effects. Its influence on the future course of governmental interference in business will be followed with keen interest.

BOOK NOTICES

Adams, Arthur B. PROFITS, PROGRESS, AND PROSPERITY. *New York: McGraw-Hill Book Company, Incorporated, 1927. 178 pp. $2.*

In this volume, the author has drafted a reply to certain theories concerning the business cycle which have recently been advanced by Messrs. Foster and Catchings in their books *Profits* and *The Dilemma of Thrift.*

In the first chapter of his book, Mr. Adams discusses the theories to which he takes exception; namely, that "Progress toward greater production is retarded because consumer buying does not keep pace with production. Consumer buying lags for two reasons: first, because industry does not disburse to consumers enough money to buy the goods produced; second, because consumers, under the necessity of saving, cannot spend even as much money as they receive. . . . . The greatest economic need, therefore, ... is the flow of money to consumers which, after providing for individual savings, would always be approximately equal to the flow of finished goods." After criticizing the assumptions back of these conclusions, the author proceeds into a very interesting analysis of the actual operations of the industrial system under different movement of the general commodity price level.

Mr. Adams points out that if all current savings are *permanently* invested in capital goods and a stable price level is maintained, there can be *no* shortage of consumers' money income. It is when consumers' goods which represent past savings and investments are thrown upon the market along with current production that an oversupply develops and prices fall. Since such liquidation of goods is usually the result of a boom, the author analyzes this economic phenomenon and finds the cause in rapidly rising price levels which are occasioned by large amounts of new bank credit being injected into circulation. He concludes that the control of bank credit, through such a medium as the Federal Reserve System, is the only way to prevent the occurrence of booms and the following period of depression.

For those interested in the economic theory underlying the industrial system, this book contains much suggestive material.

Cole, Arthur Harrison. THE AMERICAN WOOL MANUFACTURE. *Cambridge: Harvard University Press, 1926. 2 volumes. $7.50.*

Professor Cole's work is an important and valuable contribution to American business literature. Every factor that has influenced the American wool manufacture is discussed in these two volumes, from the early Colonial domestic weaving to the present-day large-scale production.

The author's treatment of the tariff, limited in scope as it must be in a study of the industry as a whole, is, nevertheless, a most interesting presentation of the vicissitudes that have attended the growth of the American wool manufacture, a "protected" industry that suffered far more, at times, from protection than from any of the imagined ills that might have befallen it as a result of unrestricted competition with other nations.

These volumes contain not only a comprehensive history of the American wool manufacture, but also an extensive survey of the raw wool markets, merchandising methods, and the technical developments that have contributed so largely to the growth of this important industry.

The American Wool Manufacture offers much of interest besides the story of wool, since comparisons are made throughout with other industries that enable the reader to grasp something of the general industrial history of the United States.

Davies, A. Emil. INVESTMENTS ABROAD. *Chicago: A. W. Shaw Company, 1927. 200 pp. $4.*

The rapidly increasing interest of America in foreign investments led Mr. Davies, an Englishman, to write *Investments Abroad* as a word of advice and caution to the beginner in the field. The author first considers briefly and somewhat pessimistically the theory and history of foreign investments. A chapter devoted to America as a foreign investor points out some of the errors made by American financiers and considers the fields toward which American capital is being directed. A rather detailed study discusses the principal European investment markets and the foreign

issues found in them. The problems of taxation raised by foreign investments are discussed, and the results of expert investigation of the problems of double taxation and tax evasion are reproduced.

The United States has given little attention to associations designed to protect the interests of investors in foreign fields, where the individual is practically powerless in cases of default. Mr. Davies presents the motives and history of two such English associations that might well serve as models. The concluding chapter contains a description of English investment trusts and some advice regarding their organization and operation which should be valuable to any one interested in so-called investment trusts now rising in this country.

Mr. Davies' book skims the surface of the various subjects that he touches upon. For this reason it probably contributes little to the knowledge of the subject in the hands of experts, yet it may well be recommended to the average American investor who is becoming interested in investments abroad.

Davis, Stephen. THE LAW OF RADIO COMMUNICATION. *New York: McGraw-Hill Book Company, Incorporated, 1927. 206 pp. $3.*

This book does not attempt to discuss the law of radio, when it does not yet exist, but " . . . . on a small scale to follow the great Lord Bacon, of whom it has been said that he 'threw out the plan of a universal dictionary of sciences and arts at a time when, so to speak, neither arts nor sciences existed,' and that when it was impossible to write a history of what was known, he 'wrote one of what it was necessary to learn.' "

The radio industry has furnished one of the most striking examples of rapid growth ever witnessed, yet the legal status upon which it is built is as yet virtually untested.

Judge Davis sat in the Supreme Court of New Mexico before becoming legal advisor to the Department of Commerce. In the latter capacity he was intimately in touch with the radio conditions leading up to, and after, the passing of the Radio Act of 1927. Inasmuch as practically no legal cases have arisen which may set precedent and establish the validity of the present law and the practices related to it, this book presents one of the best estimates that could be made of what may probably be expected to take place.

The problems that are considered include the possibility of rate regulation by the Interstate Commerce Commission, the new Radio Act of 1927, the powers of the new Radio Commission, whether or not it has the right to refuse licenses to existing stations without compensation for property losses, and the application of the laws of copyright, libel, and slander to radio communication. The discussions are for the most part based on analogous decisions in public utility, railroad, navigation, and publication cases that have set precedents.

The book should be of primary interest to those engaged in the industry, especially broadcasters, commercial radio companies, telephone companies, and advertisers using radio service.

To students of law, business, or engineering, or others who may be particularly interested in radio, it should be well worth reading. The style is lucid, non-technical, and to the point.

It was awarded the Linthicum Prize for 1927 by the Northwestern Law School.

Hardy, Charles O., and Cox, Garfield V. FORECASTING BUSINESS CONDITIONS. *New York: The Macmillan Company, 1927. 434 pp. $4.*

This work, while recognizing the limitations of statistical progress to date, is an attempt to aid the business man in minimizing his speculative hazards by means of the short-term business forecast.

The theories, statistical methods, and forms of analyses underlying the forecasts of five well-known statistical agencies, namely, the Babson Statistical Organization, the Brookmire Economic Service, the Harvard Committee on Economic Research, the Standard Statistics Company, and Moody's Investor's Service, are outlined, and their viewpoints classified. Statistical devices employed in the presentation of data are briefly described, as well as the characteristics and significance of the more useful data dealing with the various phases of business activity. The authors also present a condensed sketch of as much of business cycles and theories dealing with their causes as might appeal to the general interest of business men. In addition, there are appended tables of commonly used statistical data, and past forecasts of the above-mentioned agencies throughout the period, 1918-1926.

The book, while not a detailed treatment, is a decidedly practical one, written so that it

is of primary interest to the business man rather than to the scholar. It assists in the interpretation and evaluation of the reports of statistical services and aids the reader to evaluate the present and future on his own initiative. Although the conciseness in description does not detract from smooth reading, possibly, a more liberal use of tables and charts in several instances would have furthered the lucidity of the text.

Hirst, Francis W. SAFEGUARDING AND PROTECTION IN GREAT BRITAIN AND THE UNITED STATES. *New York: The Macmillan Company, 1927. 157 pp. $2.75.*

In the preface of this book the author states his desire to present a clear statement of the modern theory and practice of protection, with special reference to the Safeguarding and Preferential policies of the Conservative Party in England, and to the Fordney Tariff in the United States. He devotes one chapter to the problem of the war debts and another to the existing tariff restrictions in Europe.

There can be no question that the subject is one of current interest, but the author has presented only the free-trade side of the case. The arguments for free trade are cogent and well presented, but no adequate refutation of protectionist arguments is made. The fact that able and experienced men in positions of authority have advocated and do still advocate tariff protection is ascribed entirely to political corruption. Free trade is put forward as a sovereign remedy for all economic maladjustments and as the only solution of the war debt problem.

The author's failure to substantiate his position either by reasoning or by adequate statistical material detracts from the value of the book as a contribution to economic literature in this field.

Metcalf, Henry C., editor. BUSINESS MANAGEMENT AS A PROFESSION. *Chicago: A. W. Shaw Company, 1927. 383 pp. $6.*

This is a compilation of lectures edited by Dr. Metcalf. In an introduction, he points out that they represent "a unique effort to analyze the fundamentals of business administration and help develop the professional status of business management."

In the first lecture, Mr. Dennison, after giving the tests of professional status, shows how and by what means business tends to develop toward meeting these tests. Professor Rautenstrauch points out that an enterprise must have a definite objective and must be developed with due regard to the fundamental economic characteristics of the business. In discussing the management of an enterprise, he stresses the responsibility of the management to use its power for the very highest purposes. Miss Follett in her first two lectures shows that "business has already acquired some of the essentials of a profession, that it is on the way to acquire others." Dr. Person lists standards which are demanded by a profession and reaches the conclusion that business as measured by these standards is not now a profession. He believes, however, that there are certain professions which business utilizes, and within business itself certain professions are already established while others are developing. Dr. Mann deals with the personnel element and explains rating methods and job specifications in their relation to business. Mr. Heermance discusses business practices and ethics, pointing out the influence of the trade association in developing and enforcing business codes. Professor Wolfe brings out the necessity of eliminating the conflict attitude in employer-employee relations and shows that the responsibility for civilizing these relations devolves upon those who manage the business enterprises. Dr. Mosner discusses the social and civic responsibility of business management, and is followed by Dean Donham, who stresses the training of students to a realization of these responsibilities. Dean Donham points out that in training students for business their intellectual training must receive consideration and also that the students must be brought to a "thorough recognition of their social responsibilities and opportunities," the aim being to develop "socially sound leadership through expecting something more than mere money making." Mr. Wiggam discusses certain conceptions contributed by the biological sciences which he believes must become the organizing principles of our economic life. He analyzes these in developing the biological responsibility of business managers. The managerial objectives of employee representation are summarized by Mr. Burton, who also develops the advantages to be derived through the use of employee representation. Dr. Overstreet discusses the contribution of the new functional psychology to business. He deals with the interaction of functions both inside and outside a business and shows that where there is "wholesome, healthy life"

a business functions with complete integration. He then develops that disintegration is usually accompanied by "the symptoms of emotional resistance" and discusses the five major conditions under which emotional resistance are found in business. The jobs of the business administrator and the business executive are analyzed by Professor Schell. He discusses the resources which the administrator uses and the characteristics which are present in his make up. He defines the job of the executive, discusses the qualities which an executive possesses, and considers the relationship which exists between the executive and his subordinate executives. In Miss Follett's later lectures she develops the meaning of responsibility in business management. She shows how responsibility is interwoven in an organization as a result of functionalization. The decentralization of responsibility and means of providing for joint responsibility are discussed. She covers the various objectives of employee representation and the influence this type of representation has on the executive and on management. She points out that employee representation offers a working arrangement whereby labor may participate in the functional control of industry. Miss Follett concludes with an analysis of "the type of administrative leadership demanded by the present development of business management." Dr. Overstreet finally reviews the series of lectures and develops the thought that as business emerges "into that most significant type or reality which may be called a creative unity" it progresses "towards becoming a self-respecting as well as a socially respected profession."

These lectures embody an earnest effort to analyze the professional status of business.

Millet, John I. BANK AUDITS AND EXAMINATIONS. *New York: The Ronald Press Company, 1927. 490 pp. $6.*

Unit banking, so firmly entrenched in the United States, as opposed to the central banking systems of Great Britain, Canada, and the Continent of Europe, depends for its success largely upon effective supervision. The first comprehensive attempt at control of individual banks in this country dates from the passage of the National Bank Act in 1863, which put unit banking on a sound footing after decades of "wild-cat" operations. From that time, bank supervision has broadened in its scope and improved in its quality, until today more than 25,000 institutions in the United States enjoy the surveillance of state, national, and clearing-house examiners, and of public accountants acting for the banks' own directors.

But little has been contributed to the literature of the field, beyond regulations and official communications of the Comptroller of the Currency and the various state banking departments. These fragments of recorded material differ greatly in point of time and have never been conveniently assembled. The author has succeeded in producing a serviceable text and manual for all persons concerned in bank management.

The book treats of the procedure connected with each operation of a balance sheet audit. In addition, much space is devoted to the subject of auditing the income from each earning asset and the verification of the interest-paid and operating expense items so that a detailed audit program may be completely outlined. Trust departments and the acceptance business are discussed. There is an explanation of the usual types of shortages, together with methods for their detection.

The most vital part of a bank examination, the appraisal of the loans, receives but scanty attention. The author perhaps felt, and rightly, that the realm of credit analysis is too great to be included as a mere portion of any treatise. The boiling down of this phase of the subject to such small proportions leaves the impression that bank examination is a tedious ferreting for shortages and minor discrepancies, whereas the preponderant problem is a determination of the judiciousness with which other peoples' money has been loaned. While it is true that volumes have been written on bank credits, little has been said about the subject from the examiner's point of view. The vacancy to be filled here is still large.

The book might well be studied by clearing-house officials, bank auditors, and directors. Such persons are concerned with the day-to-day detail operations of banks and in the discharge of their duties should leave nothing undone that would increase their familiarity with their responsibilities. Accountants who make bank audits on behalf of directors will of course find the work a good reference.

Wilson, G. Lloyd. TRAFFIC MANAGEMENT. *New York: D. Appleton and Company, 1926. 453 pp. $3.50.*

Traffic management has been recognized but a short time as a distinctive profession, and

although much has been written on one phase of the work, rates and the rate structure, there has heretofore been no adequate treatment of the profession as such. Mr. Wilson has filled this gap in literature on transportation with his book, *Traffic Management,* and has done it with such a breadth of view and absence of prejudice that the study warrants more than nominal attention from men in this line of work. The author has had abundant practical experience as a traffic manager and he has given for the first time in book form a comprehensive view of the entire field.

The work of the traffic manager falls naturally under three headings, each of which has been treated separately in this study. Part I discusses the "functions and services of representative traffic organizations," outlining the scope of their activities and the methods by which their detailed work is handled. A glance at the table of contents will show to what lengths the author has gone to give a complete portrayal of a typical traffic department, for there are chapters on the management of shipping freight, receiving freight, plant transportation and local truck transportation, as also on the work of the rate and tariff bureaus, the problems of routing, tracing, and expediting shipments, and finally the handling of freight claims. Every phase of the routine work which the traffic manager must plan and supervise is covered.

The administration of the department and its position in the organization of the company is then discussed. An analysis of 200 industrial traffic departments resulted in their classification into four types, ranging from the simplest organization, which deals only with the non-physical aspects of the work—rates, routing, and checking—to the more complex, which include freight shipping and receiving departments; then a motor transport division; and finally a small industrial railroad with trackage and equipment.

The most constructive and important work of the traffic man is the discovery and correction of conditions which affect his industry or locality unfavorably. In many cases an appeal to the carrier is sufficient to remedy the evil, but occasionally the grievance must be taken to a state or national regulatory body, and success often hinges upon the preparation and presentation of the case. Mr. Wilson describes fully the technical procedure before the Interstate Commerce Commission and gives many valuable hints as to the most effective methods of presentation.

Although the author describes in detail the many duties of the traffic manager, there is no confusion of thought or expression, and the reader closes the book with a clear idea of the characteristics of the new profession.

Young, Robert. INDUSTRIAL CREDITS. *New York: Harper and Brothers, 1927. 555 pp. $5.*

The point of view of the book is practical business. Mr. Young is obviously influenced by his close touch with industrial credits in his connection as credit man of a large corporation. Little time is spent on the creation of a historical background. There is a very definite tendency to accept credit factors as they now exist without inquiring how or why they came into being. The development from a short introduction, a discussion of the initial credit inquiry, the investigation and factors concerned therewith, leading to the decision and a consideration of collections, is illustrative of the direct and logical approach of the practical man of business.

The presentation is in keeping with the title, *Industrial Credits;* little or no direct attention is paid to the subjects of wholesale and retail credits, although the principles developed have a rather close application in these fields. The subject of foreign credits is purposely omitted from the book.

Mr. Young has included a number of problems, or cases, which should prove a material aid to the mastery of the presented theories. The problems are made up of credit data in the form in which a credit man would receive them for decisions. For obvious reasons, no solutions are given, but this should not hinder the student from making his analysis and decision.

The text shows a thorough understanding of the subject and is well balanced, direct, and readable. The emphasis is on the practical rather than on the academic aspects of credits.

The student of credit will find this book of value whether interested in theory, practice, or procedure. The author has kept in mind especially the student who wants practical knowledge, the junior credit man, the salesman, who should know of credit practice to cooperate better with the credit department, and the credit man himself.